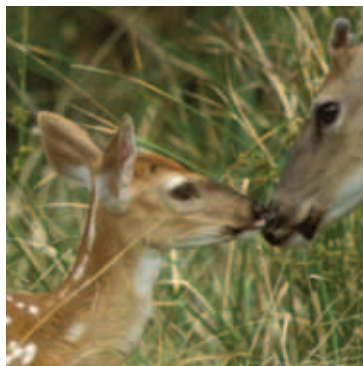




Urban Wildlife

Management and Planning Conference

May 22–25, 2011 • Austin, Texas

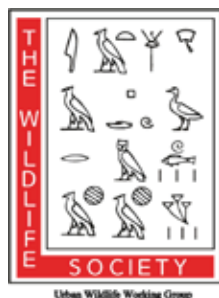


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Please join us for our Pre-Conference Activities!

SUNDAY, MAY 22, 2011

Morning and Afternoon Events:

8:00 AM – 4:30 PM Guided Field Trips (optional)

Evening Events:

5:30 PM – 6:30 PM Documentary Film Showing
Hyatt, 2nd Floor, Texas 1-3

“The Nature of Cities”

Documentary Film from Throughline Productions

“The Nature of Cities” is a one-hour documentary about the projects and people in cities across the world who believe that, even as we become more urbanized, we must reclaim an essential piece of our humanness—our connection to the nature around us. Amazing projects in cities around the globe have already begun this task. It is our goal to raise the consciousness and understanding of this movement as we explore the need of moving not only to sustainability, but also to a regenerative way of living.

The film explores both the nature in our own backyards (Austin and San Diego) and the possibilities of projects in cities of the future (Malmo, Copenhagen, Stockholm, Freiburg, Amsterdam, and Paris). The film features Sustainable Communities professor, Timothy Beatley, Ph.D., as he tours these places with city planners, landscape architects, ecologists, and residents. Commentary by Richard Louv, Ph.D. (author of *Last Child in the Woods*) and Stephen Kellert, Ph.D. (author of *Biophilic Design*) provide the background for looking at the living possibilities of how we can be in an urban environment, integrated with the nature around us.

6:00 PM – 7:30 PM Welcome Reception in Hyatt Lobby (Big Bend/Bar Area)

6:00 PM – 7:30 PM Special Event – **BOOK SIGNING**
Featuring Keynote and Conference Authors:
Marina Alberti, Ph.D.
Timothy Beatley, Ph.D.
Kieran Lindsey, Ph.D. and Clark Adams, Ph.D.
Stanley D. Gehrt, Ph.D.

7:30 PM – 8:30 PM Bat viewing at Congress Avenue Bridge, with Bat Conservation International

SCHEDULE AT-A-GLANCE

SATURDAY, MAY 22, 2011

4:00 PM – 7:00 PM Registration Foyer

SUNDAY, MAY 22, 2011

8:00 AM – 5:00 PM Registration Foyer
 8:00 AM – 5:00 PM AV Check-in for Speakers Padre Island
 8:00 AM – 5:00 PM Ecology field trips Lobby
 1:00 PM – 3:00 PM Large Exhibit Check-in/Set-up Foyer / Texas 4
 3:00 PM – 5:00 PM General Exhibit Check-in/Set-up Foyer / Texas 4
 3:00 PM – 5:00 PM Poster Check-in/ Set up Texas 5
 5:30 PM – 6:30 PM Documentary Film – “Nature of Cities” Texas 1-3
 6:00 PM – 7:30 PM Book Signing Event Bar Area
 6:00 PM – 7:30 PM Welcome Reception at Hotel Big Bend
 7:30 PM – 8:30 PM Bat Viewing Tours of Congress Avenue Bridge with Bat Conservation International Bar Area Back Door

MONDAY, MAY 23, 2011

7:00 AM – 5:00 PM Registration Foyer
 7:00 AM – 8:00 AM Continental Breakfast Foyer
 7:30 AM – 5:00 PM AV Check-in for Speakers Padre Island
 8:00 AM – 5:00 PM Exhibits Foyer / Texas 4
 8:00 AM – 5:00 PM Poster Displays Texas 5
 8:00 AM – 11:35 PM Plenary Session Texas 1-3
 9:20 AM – 9:35 AM Break
 11:35 AM – 12:15 PM Keynote Speakers Book Signing Texas 1-3 / Lobby
 11:35 AM – 1:00 PM Lunch on Own
 1:00 PM – 3:30 PM Concurrent Sessions Texas 1-3, 6-7
 3:30 PM – 4:30 PM Break & Exhibit Visitation Texas 4
 4:15 PM – 10:00 PM Off-site Events
 4:15 PM Load buses for Bracken Cave Trip Lobby
 6:00 PM Load buses for Lady Bird Johnson Wildflower Center Lobby

TUESDAY, MAY 24, 2011

7:00 AM – 5:00 PM Registration Foyer
 7:00 AM – 8:00 AM Continental Breakfast Foyer
 7:30 AM – 5:00 PM AV Check-in for Speakers Padre Island
 8:00 AM – 3:30 PM Exhibits Foyer / Texas 4
 8:00 AM – 5:00 PM Poster Displays Texas 5
 8:00 AM – 10:00 AM Concurrent Sessions Texas 1-3, 6-7
 10:00 AM – 10:15 AM Break
 10:15 AM – 12:15 PM Concurrent Sessions Texas 1-3, 6-7
 12:15 PM – 1:45 PM Lunch on Own
 1:45 PM – 3:15 PM Concurrent Sessions Texas 1-3, 6-7
 3:15 PM – 3:30 PM Break
 3:30 PM – 5:00 PM Concurrent Sessions Texas 1-3, 6-7
 6:00 PM – 11:00 PM Off-Site Event – Night In Austin! Lobby
 Bus Shuttles from Hotel to 3 areas of town
 South Austin, South Congress and East Austin

WEDNESDAY, MAY 25, 2011

7:00 AM – 10:00 AM Registration Foyer
 7:30 AM – 8:30 AM AV Check-in for Speakers Padre Island
 7:00 AM – 8:00 AM Continental Breakfast Foyer
 8:00 AM – 10:30 AM Exhibits Foyer
 8:00 AM – 10:00 AM Concurrent Sessions Texas 1-3, 5-7
 10:00 AM – 10:30 AM Break
 10:30 AM – 11:15 PM Closing Plenary Session Texas 1-3

Urban Wildlife Management and Planning Conference

CONFERENCE AGENDA

MONDAY, MAY 23, 2011

- 7:00 AM – 8:00 AM Continental Breakfast
- 8:00 AM – 4:30 PM Exhibits and Posters Open
- 8:00 AM – 11:35 AM **PLENARY SESSION**
- 8:00 AM – 8:10 AM **Welcome and Introduction**
Carter Smith, Executive Director, Texas Parks and Wildlife Department
- 8:10 AM – 8:20 AM **Lifetime Achievement Award – Lowell Adams, Ph.D.**
Presented by John Hadidian, Ph.D.
- 8:20 AM – 9:20 AM **Biophilic Cities: Integrating Nature Into Urban Design and Planning**
Keynote: Timothy Beatley, Ph.D.
Teresa Heinz Professor of Sustainable Communities, Department of Urban and Environmental Planning, School of Architecture at the University of Virginia
- 9:20 AM – 9:35 AM **BREAK**
- 9:35 AM – 10:35 AM **Ecological Resilience in Urbanizing Landscapes:
Emerging Hypotheses and Implications for Wildlife Habitat Planning**
Keynote: Marina Alberti, Ph.D.
Professor of Urban and Environmental Planning in the Department of Urban Design and Planning at the University of Washington; Director of Interdisciplinary Ph.D. Program in Urban Design and Planning and the Urban Ecology Research Laboratory
- 10:35 AM – 11:35 AM **The Road Less Traveled: Subarus, Squirrels, and the Search for Stakeholders**
Keynote: Kieran Lindsey, Ph.D.
Wildlife Biologist and Director of the Natural Resources Distance Learning Consortium, College of Natural Resources and Environment, Virginia Tech
- 10:00 AM – 12:15 PM Keynote Speakers Books For Sale (Texas Foyer)
- 11:35 AM – 12:15 PM Keynote Speakers Book Signing (Texas Foyer)
- 11:35 AM – 1:00 PM LUNCH (on your own)
- 1:00 PM – 3:30 PM **CONCURRENT SESSIONS**

SESSION A: Conservation Messaging to Diverse Stakeholders – Texas 6

Moderator: Clark E. Adams, Ph.D., Texas A&M University

- 1:00 PM Developing a Successful Distance Education Course in Urban Wildlife Management – Clark E. Adams, Ph.D., Texas A&M University
- 1:30 PM Wildlife Management Comes to Town: The Urban Wildlife Workshop Series – David Veale, Texas Parks and Wildlife Department
- 2:00 PM Motivations of Urban Volunteers to Engage in Purple Martin Conservation – Glen Hvenegaard, Ph.D., University of Alberta
- 2:30 PM Wildlife Habitat Interpretive Facilities Close To - And Away From - Urban Centers – Roy Mann, The Rivers Studio LLC
- 3:00 PM Conservation Objectives of Canadian Wildlife Festivals – Glen Hvenegaard, Ph.D., University of Alberta

SESSION B: Urban Planning & Restoration – Texas 2-3

Moderator: Cullen Hanks, Texas Parks and Wildlife Department

- 1:00 PM Lessons From the High Desert – George Radnovich, ASLA, Sites Southwest
- 1:30 PM Bird Diversity Indicates Ecological Value In Urban Home Prices – Michael Shiroya, Texas Tech University
- 2:00 PM Beyond Remediation: New Beginnings – The Woodlawn Wildlife Area – Jeffrey Popp, Wildlife Habitat Council
- 2:30 PM Natural Co-Existence or Confinement? Challenges in Integrating Bird Life Concerns into Urban Planning and Design for Zimbabwe – Trymore Muderere, Zimre Park, Zimbabwe
- 3:00 PM Urban Biodiversity Management of Guwahati City: The Gateway to North East India Utpal Bora, Ph.D., Indian Institute of Technology Guwahati, Assam, India

SESSION C: Feral Hogs and Cats: Addressing Feral Animals in Urban Areas – Texas 1

Moderator: Brett Johnson, Texas Parks and Wildlife Department

- 1:00 PM Evolution of an Urban Wild Pig Control Program: Two North Texas Examples – Robert Denkhaus, Fort Worth Nature Center
- 1:30 PM Characterization of Wild Pig-Vehicle Collisions – John J. Mayer, Savannah River National Laboratory
- 2:00 PM Wild Pig Attacks – John J. Mayer, Savannah River National Laboratory
- 2:30 PM The Influence of Socio-Demographic Factors on Free-Roaming Cat Densities in an Urban Ecosystem In Israel – Hilit Finkler, Tel Aviv University
- 3:00 PM Panel Discussion

SESSION D: Urban Wildlife Conflict Management – Texas 7

Moderator: Tom Harvey, Texas Parks and Wildlife Department

- 1:00 PM When Good Birds Go Bad: Human-Bird Conflicts in Residential & Commercial Landscapes – Rob Fergus, Bird-B-Gone, Inc.
- 1:30 PM Help! Some Wild Animal is Eating the Roses in My Backyard! Towards an Urban Wildlife Management Concept in Baden-Wuerttemberg, Germany – Geva Peerenboom, University of Freiburg, Germany
- 2:00 PM Limiting the Use of Lethal Control of Black-Tailed Prairie Dogs (*Cynomys ludovicianus*) for Public Improvement Projects – Valerie Matheson, City of Boulder, Colorado

- 2:30 PM The Use of Flow Devices to Reduce Road Maintenance and Repair Costs Associated with Beaver Activity at Chronic Damage Sites in Virginia – Stephanie Boyles, The Humane Society of the United States
- 3:00 PM Assessing Aggressive and Passive Behaviors of Urban Nesting Mississippi Kites – Ben Skipper, Ph.D., Texas Tech University

3:30 PM – 4:30 PM EXHIBIT VISITATION AND BREAK

4:15 PM Buses Load for Bracken Cave Trip (with delicious boxed dinner) Enjoy viewing 20 million Mexican Free-tailed Bats!

6:00 PM Buses Load for Ladybird Johnson Wildflower Center Sample mouth-watering exotic game prepared by the Texas Game Warden Association Cook Team (and other catered treats) while wandering the lovely grounds. The Center features sustainable native landscaping and architecture.

TUESDAY, MAY 24, 2011

7:00 AM – 8:00 AM Continental Breakfast

8:00 AM – 3:30 PM Exhibits and Poster Displays Open

8:00 AM – 12:15 AM **CONCURRENT SESSIONS**

SESSION E: Integrating Wildlife Conservation into Neighborhood Design (FULL DAY) – Texas I

Moderators: Chris Moorman, Ph.D., and Nils Peterson, Ph.D., North Carolina State University

- 8:00 AM A Cross City Comparison of Urban Birds – Charles Nilon, Ph.D., University of Missouri-Columbia
- 8:30 AM Conserving Urban Wildlife? Creating Green Infrastructure is Only the First Step – Mark Hostetler, Ph.D., University of Florida
- 9:00 AM Wildlife in Neighborhoods: Management and Conservation of Everyday Nature – Charles Nilon, Ph.D., University of Missouri-Columbia
- 9:30 AM Does Public Education Regarding Native Landscape Design Influence Residential Landscaping Preferences? – Nils Peterson, Ph.D., North Carolina State University
- 10:00 AM BREAK**
- 10:15 AM The Ecology of Suburbia: Why Some Birds Thrive in Human-dominated Landscapes and Others Don't – Rob Blair, University of Minnesota
- 10:45 AM Seeing Beyond the Glare of EcoBling-Sensible Leadership in Green Building – Peter Pfeiffer, Barley & Pfeiffer Architects
- 11:15 AM Identifying Strategies to Facilitate Implementation of Conservation Subdivisions – Chris Moorman, Ph.D., North Carolina State University
- 11:45 AM Development Pattern and Wildlife Habitat Protection in County Conservation Design Regulations – Sarah Reed, Ph.D., Colorado State University

SESSION F: Urban Coyotes – Texas 2-3

Moderator: Stewart Breck, Ph.D., National Wildlife Research Center

- 8:00 AM Uneasy Neighbors? A Review of Coyotes in Urban Landscapes – Stanley D. Gehrt, Ph.D., Ohio State University
- 8:30 AM Individual Variation in Coyote (*Canis latrans*) Boldness and Aggression: Implications for Urban Conflict and Management – Lynne Gilbert-Norton, Ph.D., Utah State University
- 9:00 AM Home Range, Activity Patterns, and Habitat Selection of the Southeastern Coyote (*Canis latrans*) Along an Urban-Rural Gradient – Holly Jantz, Auburn University
- 9:30 AM Mangle and Conflict Behavior in Urban Coyotes – Maureen Murray, Ph.D., University of Alberta
- 10:00 AM BREAK**
- 10:15 AM Trapping and Managing Urban Coyotes: Practical Advice for Natural Resource Professionals and Urban Managers – David Bergman, USDA/APHIS/Wildlife Services
- 10:45 AM An Overview of Human-Coyote Interactions in New York: Implications for Large-Scale Monitoring of Conflicts – Daniel A. Bogan, Cornell University
- 11:15 AM Coyote Education and Outreach in Urban Environments: Managing Coyote Conflict Equals Managing People – Mary Ann Bonnell, Aurora Open Space & Natural Resources Division
- 11:45 AM Spatial and Temporal Patterns of Human-Coyote Conflict in the Denver Metropolitan Area – Sharon Poessel, Utah State University
- 12:15 PM Panel Discussion

SESSION G: Case Studies in Wildlife Conservation & Ecology – Texas 6

Moderator: Chuck Kowaleski, Texas Parks and Wildlife Department

- 8:00 AM Seasonal Value of Urban Important Bird Area Habitat to Migrating and Breeding Landbirds – Tania Z. Homayoun, University of Minnesota
- 8:30 AM Evidence Based Avian Conservation in Dutch Cities – Jip Louwe Kooijmans, Birdlife International, Netherlands
- 9:00 AM Urban Bat Management and Conservation – Laura S. Finn, Fly By Night, Inc.
- 9:30 AM Increased Urbanization Could Provide Opportunity for Increased Aquatic Exotic Releases: Impacts to Industry and Pro-Active Measures Taken at a State and National Level – Luci Cook-Hildreth, Texas Parks and Wildlife Department
- 10:00 AM BREAK**
- 10:15 AM Reducing the Risk of Biological Invasion by Creating Incentives for Pet Sellers and Owners to Do the Right Thing – Gad Perry, Ph.D., Texas Tech University
- 10:45 AM Assessing the Impact of Human Development on High Priority Forest Birds at a Regional Scale – Todd Jones-Farrand, U.S. Fish & Wildlife Service
- 11:15 AM Zombie Turtles Living in Our Cities – Russell Burke, Ph.D., Hofstra University
- 11:45 AM Habitat Selection of an American Alligator (*Alligator mississippiensis*) Population at the Edge of Their Distribution Range – Joseph Lewis, Texas A&M University-Commerce

SESSION H: Non-Traditional Wildlife Habitat Sources – Texas 7

Moderator: Keith Crenshaw, Texas Parks and Wildlife Department

- 8:00 AM Marginal Nature: Urban Wasteland and Hybrid Ecosystems – Kevin M. Anderson, Austin Water Utility Center For Environmental Research
- 8:30 AM Environmental Planning and Your Golf Course – Bob Cook, Walden on Lake Houston Golf Club

- 9:00 AM Creating a Safer Environment for Wildlife and Humans: Diligent Planning and Wildlife Management in and Around Airports – Olivia Munzer, SWCA Environmental Consultants
- 9:30 AM Encouraging Wildlife on Golf Courses – Mark Claburn, Tierra Verde Golf Club
- 10:00 AM BREAK**
- 10:15 AM The Greater Atlanta Pollinator Partnership: A Model for Urban Pollinator Conservation – Dennis L. Krusac, USDA Forest Service
- 10:45 AM Demographics of an Urban Water Snake Population: Mark-Recapture of *Nerodia erythrogaster* on the University of Texas at Austin Campus – Travis J. LaDuc, Ph.D., Texas Natural Science Center
- 11:15 AM Greening Corporate Mindscapes: A New Model for Greening Corporate and Institutional Landscapes – Lou Verner, Virginia Department of Game & Inland Fisheries
- 11:45 AM Developing Partnerships and Certifying Habitat Programs on Corporate Lands – Sumita Prasad, Wildlife Habitat Council

12:15 PM – 1:45 PM LUNCH (on your own)

1:45 PM – 5:00 PM **CONCURRENT SESSIONS**

SESSION E: (Continued) Integrating Wildlife Conservation into Neighborhood Design – Texas I

Moderators: Chris Moorman, Ph.D. and Nils Peterson, Ph.D., North Carolina State University

- 1:45 PM Bird Friendly Building Guidelines – Jennifer Young, Lake Flato Architects
- 2:15 PM How an Urban Playscape Can Be a Natural Oasis for Learning and Play – Tenna Florian, Lake Flato Architects
- 2:45 PM Providing a Place for Wildlife in Urbanized Environments Through a Certified Wildlife Habitat Program – Steffenie Widows, University of Wisconsin-Madison
- 3:15 PM BREAK**
- 3:30 PM Implementing Conservation Subdivisions in Texas – John Davis, Texas Parks and Wildlife Department
- 4:00 PM The Woodlands: A Model for Urban Wildlife Habitat Preservation – Elise Bright, Ph.D., Texas A&M University
- 4:30 PM Thriving by Living Green: Creating Your Sustainable Home & Future – LaVerne A. Williams, Environment Associates, Architects & Consultants

SESSION I: Urban Carnivores – Texas 2-3

Moderator: Seth P.D. Riley, Ph.D., National Park Service

- 1:45 PM Urban Stone Martens (*Martes foina*) in Europe: Ecology and Conflicts – Jan Herr, Ph.D., Administration de la nature et des forêts (Department for Nature and Forestry)
- 2:15 PM Novel Mortality Sources in an Urban Population of Endangered San Joaquin Kit Foxes in Bakersfield, California – Christine L. Van Horn Job, CSU-Stanislaus, Endangered Species Recovery Program
- 2:45 PM Movement Patterns and Survival of Feral Domestic Cats in Urban Parks – Stanley D. Gehrt, Ph.D., Max McGraw Wildlife Foundation
- 3:15 PM BREAK**
- 3:30 PM Ecological and Behavioral Adaptations for Survival in Urban Fisher – Scott LaPoint, New York State Museum

- 4:00 PM Urban Black Bear Ecology: Fluctuating Synanthropy and Its Implications for Management – Stewart W. Breck, Ph.D., USDA-WIS-National Wildlife Research Center
- 4:30 PM The Carrot or the Stick? Evaluation of Education and Enforcement as Management Tools for Urban Human-Bear Conflicts – S. Baruch-Mordo, USDA-WIS-National Wildlife Research Center

SESSION J: Planning Tools for Protecting Water Sources and Urban Green Spaces – Texas 6

Moderator: Karen Clary, Ph.D., Texas Parks and Wildlife Department

- 1:45 PM Changing the Landscape: Leveraging Water Conservation Programs to Support Urban Wildlife – Rick Soehren, California Department of Water Resources
- 2:15 PM Productive Landscapes: An Innovative Approach to Managing Development, Stormwater and Agriculture in an Urban Environment – Laurie Brown, Pattie Banks Associates
- 2:45 PM An Urban Ecosystem Approach to Stream Setbacks in Kansas City, Missouri – Laurie Brown, Patti Banks Associates
- 3:15 PM BREAK**
- 3:30 PM Protecting the Edwards Aquifer and the Water of San Antonio through Natural Areas and Conservation Easements – Kristyl Smith, City of San Antonio
- 4:00 PM Accomplishing Lasting Land Conservation: A Market Viewpoint – Carolyn Vogel, Texas Conservation Connection
- 4:30 PM Conservation Easements as a Tool for Land Protection Within Conservation Developments – Daniel Dietz, Texas Land Conservancy

SESSION K: Conservation Messaging to Diverse Stakeholders Part 2 – Texas 7

Moderator: Clark E. Adams, Ph.D., Texas A&M University

- 1:45 PM Strengthening Education, Environment and Economy Through Wilderness and Other Public Lands – P. Stephen West, New Mexico Wilderness Alliance & Our Texas Wild
- 2:15 PM What Can We Learn From 55,000 Urban Wildlife Hotline Calls? – Kathy Milacek, DFW Wildlife Coalition
- 2:45 PM Where Rural and Urban Meet: “The Story Of Strawberry House” – L. Pete Heard, USDA NRCS Agricultural Wildlife Conservation Center
- 3:15 PM BREAK**
- 3:30 PM Texas Nature Trackers: A Citizen Science Monitoring Effort – Marsha E. May, Texas Parks and Wildlife Department
- 4:00 PM Citizen Science: A Tool For Ecosystem Surveys and Public Education – Ben Eldridge, Cibolo Nature Center
- 4:30 PM Generating Community Support for Wildlife Stewardship: Lessons From Camrose, Alberta, Canada – Glen Hvenegaard, Ph.D., University of Alberta, Augustana Campus
- 5:00 PM CONCURRENT SESSIONS ADJOURN
- 6:00 PM Buses Loading NIGHT IN AUSTIN Trips
Enjoy a night on the town, experiencing “Keep Austin Weird” (South Congress Area), “Casual and Green” (South Austin Area), and “East Austin Chic”
- 6:00 PM – 11:00 PM NIGHT IN AUSTIN; Buses circulating all transportation stops for return trip to Hyatt
- 11:00 PM Last Bus Returning to Hyatt from all stops

WEDNESDAY, MAY 25, 2011

7:00 AM – 8:00 AM Continental Breakfast

8:00 AM – 10:30 AM Exhibits Open

8:00 AM – 10:00 AM **CONCURRENT SESSIONS**

SESSION L: Close Encounters: Talking to the Public About Urban Wildlife – Texas 5

2-Hour Workshop: Kieran J. Lindsey, Ph.D., and Nancy L. Hawekotte

8:00 AM Close Encounters Workshop

SESSION M: Urban Carnivores Part 2 – Texas 1

Moderator: Stanley D. Gehrt, Ph.D., Ohio State University

- 8:00 AM Survival and Dispersal of Bobcat Kittens in an Urban Environment –
Joanne Moriarty, National Park Service
- 8:30 AM Towards a New Tradition of Ecological Knowledge: Contributions of Urban Residents to
Research on Bobcats and Coyotes in California – Erin E. Boydston, U. S. Geological Survey
- 9:00 AM Ecology and Conservation of Mountain Lions in an Urban Landscape in Southern California –
Seth P. D. Riley, Ph.D., National Park Service
- 9:30 AM Community Coyote Hazing Programs: Achieving Success Through Shaping the Behavior
of Both People and Coyotes – Lynsey A. White, The Humane Society of the United States

SESSION N: Policy and Processes for Overabundant Urban Wildlife – Texas 2-3

Moderator: Ryan Schoeneberg, Texas Parks and Wildlife Department

- 8:00 AM Toronto's Leslie Street Spit: Habitat Creation, Urban Hybridity and Environmental Planning –
Jennifer Foster, Ph.D., York University
- 8:30 AM Managing White-Tailed Deer in Urban Environments: An Animal Protection and Welfare
Perspective – John Hadidian, Ph.D., The Humane Society of the United States
- 9:00 AM A Case-Based Decision Analysis of Urban Deer Management Strategies –
G. Kent Webb, San Jose State University
- 9:30 AM Urban and Suburban Deer Management by State Wildlife Conservation Agencies –
Rachael E. Urbanek, Southern Illinois University

SESSION O: Case Studies in Ecology-based Restoration – Texas 6

Moderator: Marita Roos, Urban Biology

- 8:00 AM Green Infrastructure for San Antonio and Beyond – Marita Roos, Urban Biology
- 8:30 AM Grassland Restoration Near Urban Areas: It Can Be Done –
Mark Simmons, Lady Bird Johnson Wildflower Center
- 9:00 AM Restoration of An Urban River: San Antonio's Mission Reach –
Lee Marlowe, San Antonio River Authority
- 9:30 AM Panel Discussion

SESSION P: Sustainable Design and Regional Planning – Texas 7

Moderator: Nancy Herron, Texas Parks and Wildlife Department

8:00 AM Improving the Process of Setting Biodiversity Baselines: A Case Study from Austin, Texas
Using a Holistic Approach Combined with Species Distribution Modeling –
Dean A. Hendrickson, University of Texas

8:30 AM Case Study: Acquisition of the Habitat Authority's Puente Hills Preserve, California –
Andrea Gullo, Puente Hills Landfill Native Habitat Preservation Authority

9:00 AM The Military-Ecological Complex: Security, Sustainability, and the Future Roles of Military Lands
in an Urbanizing World – Allan W. Shearer, Ph.D., University of Texas

9:30 AM How Policy and Design Collaborate Through the Eyes of a Landscape Architect –
Robert Anderson, J. Robert Anderson Landscape Architects

10:00 AM – 10:30 AM **BREAK**

10:30 AM – 11:15 AM **PLENARY SESSION**

Closing Plenary:

Where Do We Go From Here? A Vision of the Future for Urban Wildlife

Keynote: John Davis

Interim Wildlife Diversity Program Director, Texas Parks and Wildlife Department

11:15 AM CONFERENCE ADJOURNS

We hope you've enjoyed your time in Austin, Texas. Travel home safely!

PLEASE THANK OUR SPONSORS!

Check our Conference Website for Plenary Information

www.urbanwildlife2011.org

POSTER PRESENTATIONS

Check these out in conference room Texas 5

Urban Playa Hydrology Restoration: Urban Playa Habitat Improvements in Midland, Texas

Nathan Knowles, I-20 Wildlife Preserve, Midland, TX
Martin Christman, Geosyntec Consultants, Austin, TX

Introduced Amphibians and Reptiles in the Lesser Antilles: A Primarily Urban Phenomenon

Gad Perry, Department of Natural Resource Management, Texas Tech University, Lubbock, TX
Robert Powell, Department of Biology, Avila University, MO

Herpetofauna Admitted to the South Plains Wildlife Rehabilitation Center (Lubbock, Texas): A Two-Decade Perspective

Kathleen McGaughey, Mark Wallace and Gad Perry, Department of Natural Resource Management, Texas Tech University, Lubbock, TX

Effects of Urbanization on Movements, Activity, and Translocation Site Fidelity of Ornate Box Turtles in the Southern High Plains of Texas

J. Alan Sosa and Gad Perry, Department of Natural Resource Management, Texas Tech University, Lubbock, TX

Density and Behavior in an Urban Squirrel Population

William E. Persons and Tommy S. Parker, University of Louisville, KY

Surviving in the City: A Review of Urban Predation and Its Impacts on Avian Communities

Jason D. Fischer, Program in Ecology, Evolution and Conservation Biology, University of Illinois-Urbana/Champaign, Urbana, IL

Responses of Medium and Large Mammals to Increased Recreation and Other Activities Over an Eight Year Period in the Puente Hills Preserve

Shannon Lucan and Andrea Gullo, Puente Hills Landfill Native Habitat Preservation Authority, Whittier, CA

Evaluating the Network of Habitat Patches in Lake County, Illinois Through the Use of GIS

Andrew Valand, University of Illinois at Chicago, College of Urban Planning and Policy, Chicago, IL

Every Day Is a Winding Road: Local-Scale Analyses of the Influence of Highways on Wildlife Connectivity in Southern California

Lisa M. Lyren¹, Robert S. Alonso², William M. Perry¹, Robert V. Lugo¹, Kevin R. Crooks² and Erin E. Boydston¹

¹Western Ecological Research Center, U.S. Department of the Interior, U.S. Geological Survey

²Colorado State University, Department of Fish, Wildlife, and Conservation Biology

Teaching Students to Work in Urbanizing Forests: Changing Roles in Natural Resources Education

Nicole Wulff, U.S. Forest Service, Gainesville, FL

Francisco Escobedo, University of Florida, Gainesville FL

Toad Trackers: Using Citizen Scientists Through Conservation Education Programming to Monitor Amphibian Populations

Rachel Rommel, Houston Zoo, Inc. Department of Conservation and Science, Houston, TX

Paul S. Crump, Houston Zoo, Inc. Department of Conservation and Science, Houston, TX

Bird City Wisconsin: Making Our Communities Healthy for Birds ... and People

Carl Schwartz, Bird City Wisconsin, Bayside, WI

Noel Cutright, Wisconsin Society of Ornithology, West Bend, WI

Provisioning Rates of Urban Mississippi Kites

Brandi Welch, Department of Biological Sciences, Texas Tech University, Lubbock, TX

Clint Boal, USGS Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX

**Open Space System as an Armature for Urban Expansion: A Poster:
Exploration of Landscape Pattern Effects on Wildlife Movements in Urban Areas**

Homero M. Penteado, Ph.D. Candidate, University of Oregon, Eugene, OR

*Please take time during breaks and your free time
to check out our conference exhibitors in the foyer!*

WELCOME ADDRESS



Carter Smith
Executive Director,
Texas Parks and
Wildlife Department

Carter Smith serves as the Executive Director of the Texas Parks and Wildlife Department (TPWD), a position he has held since January 2008.

A native of Austin, Smith developed his passion for wildlife and the outdoors at a young age while roaming his family's farm and ranch land interests in Gonzales, Williamson and Edwards counties. He has a wildlife management degree from Texas Tech and a master's degree in conservation biology from Yale University. He began his professional career in 1992 as a management intern at TPWD, assisting in the Private Lands and Public Hunting programs. As a biologist, he has worked on a variety of research projects ranging from studying moose in the boreal forests of Saskatchewan to pronghorn antelope in far West Texas.

He serves on a number of conservation-related boards of directors and advisory councils and was recently named an outstanding alumnus by Texas Tech and the College of Agriculture and Natural Resources. He currently serves as Chairman of the Teaming With Wildlife Committee of the Association of Fish and Wildlife Agencies.

Prior to his selection as TPWD executive director, Smith was with The Nature Conservancy of Texas, serving as State Director, where he led a team that protected nearly 250,000 acres.

At Texas Parks and Wildlife Department, he is responsible for overseeing an agency of 3,100 professionals in 11 different divisions, including Wildlife, Law Enforcement, State Parks, Coastal Fisheries and Inland Fisheries.

Carter and his wife, Stacy, reside in Austin.



LIFETIME ACHIEVEMENT AWARD

Presented to Lowell William Adams, Ph.D.

Lowell was born on August 8, 1946, in Harrisonburg, Virginia. He grew up on a nearby farm and developed an early interest in wildlife and the outdoors. He received a BS degree in forestry and wildlife from Virginia Polytechnic Institute and State University, and M.S. and Ph.D. degrees in zoology from Ohio State University, specializing in wildlife biology.

Lowell began his professional career in the fall of 1976 as a wildlife biologist with the Urban Wildlife Research Center in Ellicott City, Maryland. His early research there focused on the effects of roads and highways on wildlife. Later he worked more specifically in urban wildlife ecology and human-wildlife relationships in the urban environment. In 1995, he formed Urban Wildlife Resources to serve as an information source and clearinghouse for urban wildlife-related matters.

In 1987, Lowell accepted a part-time faculty appointment in the Natural Resources Management Program at the University of Maryland, from which he is now retiring. He served on the graduate faculty at that institution and oversaw graduate student research that focused on immunocontraception for controlling urban-suburban white-tailed deer populations, the role of gray squirrels in maintaining the life cycle of the black-legged tick, and genetic variation in box turtle populations isolated by habitat fragmentation. He is the President of the Maryland Partners of the Americas, a cooperative exchange program partnering with more than 30 Latin American and Caribbean nations to foster goodwill and understanding.

Lowell was senior editor of two books on urban wildlife—*Integrating Man and Nature in the Metropolitan Environment* (1987) and *Wildlife Conservation in Metropolitan Environments* (1991), and senior author of *Wildlife Reserves and Corridors in the Urban Environment*, a book designed as a guide to ecological landscape planning and resource conservation, published in 1989. His book, *Urban Wildlife Habitats: A Landscape Perspective*, published by the University of Minnesota Press in 1994 was the first classroom-ready text on the subject. By invitation, he has participated in international urban ecology seminars in England, South Africa and the Netherlands.

In recognition of his achievements in the field of urban wildlife ecology and management, Lowell received the exceptional service award of the National Institute for Urban Wildlife in 1986. He also received the Chevron Conservation Award (1987) and the Daniel L. Leedy Urban Wildlife Conservation Award (1992) for outstanding professional commitment and contributions to the conservation of wildlife and habitat in urban, suburban and developing areas.

Lowell has been active in The Wildlife Society (TWS) since his undergraduate days at Virginia Tech where he was elected student chapter president in 1968. He served as Secretary-Treasurer (1983), President-Elect (1984), and President (1985-86) of the Maryland Chapter. Most recently he served as chair of the Urban Wildlife Working Group of TWS. He was certified as a wildlife biologist in 1978 by TWS.

Lowell is one of the “founding fathers” of urban wildlife in the United States, a leader and inspiration to everyone who follows this discipline. His commitment to and work in this field has been pioneering and instrumental to its acceptance by the wildlife profession.

KEYNOTE SPEAKERS



Timothy Beatley, Ph.D.

*Biophilic Cities:
Integrating Nature
into Urban Design
and Planning*

Timothy Beatley is Teresa Heinz Professor of Sustainable Communities, in the Department of Urban and Environmental Planning, School of Architecture at the University of Virginia, where he has taught for more than twenty years. His primary teaching and research interests are in environmental planning and policy, with special emphasis on coastal and natural hazards planning, environmental values and ethics, and biodiversity conservation. Much of Beatley's work focuses on the subject of sustainable communities and creative strategies by which cities and towns can fundamentally reduce their ecological footprints, while at the same time becoming more livable and equitable places. He has written more than fifteen books, including: *Ethical Land Use*, *The Ecology of Place*, *Habitat Conservation Planning: Endangered Species and Urban Growth*, *Natural Hazard Mitigation and An Introduction to Coastal Zone Management*, *Green Urbanism: Learning from European Cities*, and *Native to Nowhere: Sustaining Home and Community in a Global Age*. He recently co-authored two new books with Australian planner Peter Newman: *Resilient Cities* and *Green Urbanism Down Under*. His most recent book is *Biophilic Cities: Integrating Nature into Urban Design*, available now from Island Press. Beatley writes a regular column for *Planning Magazine*, called *Ever Green*, about environmental and sustainability matters. He also recently collaborated on a documentary film about green cities, entitled *The Nature of Cities*, which has been shown on PBS (Public Broadcasting System) stations all over the U.S.

Beatley holds a Ph.D. in City and Regional Planning from the University of North Carolina at Chapel Hill.

<http://biophiliccities.org/book.html>

<http://blog.islandpress.org/author/timbeatley>



Marina Alberti, Ph.D.

Ecological Resilience in Urbanizing Landscapes: Emerging Hypotheses and Implications for Wildlife Habitat Planning

Marina Alberti is Professor of Urban and Environmental Planning in the Department of Urban Design and Planning at the University of Washington. She directs the Interdisciplinary Ph.D. Program in Urban Design and Planning and the Urban Ecology Research Laboratory. She teaches courses in Urban Ecology, Environmental Planning, Geographic Information Systems, and Group Dynamic and Conflict Resolution. She also teaches an Advanced Course in Research Design. Her research interests are in the impacts of alternative urban development patterns on ecosystem dynamics. She is the Principal Investigator on a number of grant-funded research projects including an NSF Biocomplexity Grant project aiming to study the emergent properties of urban landscapes in Seattle, WA and Phoenix, AZ. Her research also focuses on measures of urban environmental performance that can be used to monitor progress and inform policy-making and scenario planning. She is especially interested in advanced interdisciplinary approaches to urban ecological problems. One of her most recent books entitled *Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems* (Springer 2008) synthesizes the state of knowledge on the complex interactions between of urbanization and ecological function and articulates the challenges for scholars of urban ecosystems. Her newest book, *Cities as Hybrid Ecosystems* (UW Press) is expected to be published in 2011.

<http://www.urbaneco.washington.edu/>

http://www.urbaneco.washington.edu/UERL_biosketches/marina.html



Kieran Lindsey, Ph.D.

The Road Less Traveled: Subarus, Squirrels, and the Search for Stakeholders

Based at Virginia Tech's College of Natural Resources and Environment, Kieran Lindsey is a wildlife biologist and Director of the Natural Resources Distance Learning Consortium. She is co-author of an award-winning textbook entitled *Urban Wildlife Management* and teaches graduate-level distance learning courses in Urban Wildlife, Human Dimensions, and Human-Wildlife Conflict. Kieran also serves as Editor for the *Journal of Wildlife Rehabilitation*.

A commitment to public education and outreach has been the driving force behind Kieran's involvement in both traditional and social media – as a columnist for the *Houston Chronicle* newspaper (1998–2001); as the producer, writer and host of *Wild Things Radio!*, aired by National Public Radio affiliate KUNM-FM in Albuquerque, NM (1999–2001); as the producer of an Emmy® Award winning educational documentary feature for PBS (1998); and on her blog, "Next-Door Nature." Most recently, Kieran is having way too much fun answering wildlife questions as Animal-Vehicle Biologist, a newly created honorary position at *Car Talk*, one of NPR's most popular shows.

<http://nextdoornature.org>



John Davis

*Where Do We Go
from Here? A Vision
of the Future for
Urban Wildlife*

John Davis serves as the Interim Wildlife Diversity Program Director at Texas Parks and Wildlife Department (TPWD). Holding Masters Degrees in biology and urban planning, John seeks to better integrate the two disciplines. Currently, he oversees various programs connecting TPWD to the public. Areas of focus include managing species of concern, addressing threats to wildlife, and generating urban support for dedicated wildlife funding in Texas.

Knowing that humans decide the fate of wildlife habitats and populations, John connects constituents to a variety of outdoor pursuits. He believes it is a wildlife biologist's duty to create a love for the outdoors in as many people as possible. From hunting to "herping," he strives to make wildlife conservation central to all Texans.

PRESENTATION ABSTRACTS

MONDAY, MAY 23, 2011

SESSION A: Conservation Messaging to Diverse Stakeholders

Moderator: Clark E. Adams, Ph.D., Texas A&M University

Developing a Successful Distance Education Course in Urban Wildlife Management

Clark E. Adams, Texas A&M University, Department of Wildlife and Fisheries Sciences, College Station, TX 77843-2258

The development, delivery, and administration of effective distance education courses requires that the instructor give particular attention to the structural components, or course infrastructure. Everything has to be connected to everything else, including textbook, study guide, online lectures, PowerPoint notes, and exams. Shortcuts are not an option. Teacher and learner need to have a clear understanding of where they are going, how they will get there, and how they will know when they have arrived. Attention has to be given to the variations in student learning styles, so a diversity of content mastery options need to be made available. In summary, distance education course development requires discipline, dedication, and a determination to go far beyond what is required in face-to-face traditional classroom instruction. This presentation will include a demonstration of an online urban wildlife management course developed by the presenter.

Wildlife Management Comes to Town: The Urban Wildlife Workshop Series

David Veale, Texas Parks and Wildlife Department, 426 West Oaklawn, Pleasanton, TX 78064

Diana Foss, Texas Parks and Wildlife Department, 14320 Garrett Rd, Houston, TX 77044

The Texas Parks and Wildlife Department (TPWD) has long held workshops in rural areas for private landowners focusing on wildlife habitat management. Changing landowner demographics made it hard for many absentee landowners residing in urban areas to learn about sound wildlife management principles. Many new landowners were applying traditional urban horticultural techniques to their small properties including introduction of exotic grasses and reduction of brush species. In 2002 TPWD Urban Wildlife Biologists in Houston began an annual workshop series titled "Managing Your Land for Wildlife" that brought subject matter experts to the urban centers to educate landowners who lived in these urban areas, but owned rural land in other parts of the state. The first workshop had 250 attendees, representing 8 of the 10 ecological regions of Texas. Attendees were introduced to wildlife management principles that can be applied in both urban and rural settings. Attendees were primarily from urban areas around Texas, with some driving four hours to attend this workshop. This workshop proved to be an effective way of utilizing a wide variety of federal, state and local agencies to reach a broad cross-section of absentee landowners and served as a model for a statewide effort from TPWD. These workshops increased the knowledge base of urban residents that will help with buy-in for urban wildlife management decisions. It also showed a strong desire for urban residents to learn about their natural surroundings.

Motivations of Urban Volunteers to Engage in Purple Martin Conservation

Glen Hvenegaard and Candice Tremblay, University of Alberta, Augustana Campus, 4901-46 Avenue, Camrose, Alberta T4V 2R3 Canada

Many urban wildlife conservation initiatives depend on the successful recruitment and satisfaction of volunteers. Thus, it is necessary to understand and evaluate volunteer motivations for donating time to wildlife conservation projects. Purple Martins (*Progne subis*) are almost completely dependent on landlords providing and managing specifically-designed nest boxes. The goal of this study is determine the motivations, satisfactions, and commitments of Purple Martin landlords. Based on semi-structured interviews of eleven Landlords in Camrose, Alberta, Canada, we recorded, transcribed, and evaluated responses in order to categorize key themes that motivated initial and continued involvement in Purple Martin conservation. In general, landlords were more motivated by egoistic than altruistic reasons. Egoistic motivations included, in decreasing order of importance, interaction with the birds, social interaction (including friendship, self-expression, competition, knowledge, and assistance), achievement and pride, personal stimulation, novelty, and enjoyment. Altruistic

motivations included conserving nature for its intrinsic value, helping the Purple Martin, and duty to community and grandchildren. These results help improve urban wildlife conservation by understanding how to better recruit, manage, and satisfy volunteers. Project organizers should offer opportunities for social interaction (e.g., meetings, mentoring, phone lists), supply landlord-specific information, encourage recording of Martin nesting results, and provide a broader context for the conservation of Purple Martins.

Wildlife Habitat Interpretive Facilities Close To - And Away From - Urban Centers

Roy Mann, The Rivers Studio, Austin, TX

The objectives of this talk are to present images, histories, and data on four wildlife/habitat interpretive centers, two in Texas, two elsewhere, that have drawn or are expected to draw eco-tourists and other segments of the public, that have educational roles of state-wide significance. The first: the Plume Visitors Center in New Hampshire's White Mountains State Park, the site plans for which were partially the work of the author. Situated in the Pemigewasset River valley, it is ecologically and climatically distinctive. The second: the Clarion River Habitat Interpretive Center, planned on the 52-mile designated Wild and Scenic River reach of the Clarion River in northwest Pennsylvania, on the edge of central Ridgway. Interpretation of Allegheny Mountains wildlife and discussion of river and floodplain management will be subjects of the program. A physical model of the 200-mile Clarion River, 200 yards long, is planned for the adjacent restored-habitat park. The third will be the 100-acre Playa Wildlife Preserve near the center of Midland, Texas, for which the author provided original concepts and a master plan in 2008; real-time tracking of migratory birds, as well as the dependence of West Central Flyway birds on the gradually disappearing playas of the region, will be key themes. The final example will be the Laguna Madre Interpretive Center, now in planning for Willacy County's Port Mansfield. This center's interpretation of the Laguna, the state's largest and most environmentally important estuary, will be key. The summary will address challenges, planned solutions, and importance of urban-located facilities.

Conservation Objectives of Canadian Wildlife Festivals

Glen Hvenegaard, University of Alberta, Augustana Campus, 4901-46 Avenue, Camrose, Alberta T4V 2R3 Canada

Wildlife festivals, or public celebrations of local wildlife features, are popular in urban areas. Typical activities include guided walks, presentations, children's crafts, birding competitions, and trade shows. Festivals often promote community development, economic impacts, and recreational opportunities, but little is known about wildlife festivals helping wildlife. The goal of this study was to determine the relative emphasis that organizers of wildlife festivals in Canada place on conservation objectives compared to other objectives. In 2009, we surveyed organizers of 84 wildlife festivals in Canada, receiving responses from 45. Organizers indicated the importance of 25 objectives and 16 practices related to festivals, ecotourism, and conservation. High ranking objectives related to nature-based activities, learning opportunities, skill development, and initiating interest in nature. Middle ranking objectives related to environmental awareness, community development, competition, and increased membership. Low ranking objectives related to local employment, captive or non-living wildlife, and fund-raising for wildlife or habitat. Most festivals provide environmental education activities, re-use signage, and promote recycling, whereas fewer festivals conduct wildlife research, promote energy conservation, or use social science research to support conservation. In general, wildlife festivals emphasize nature-based activities and education more than the sustainability of local communities and the natural environment. Organizers should implement more practices that enable festivals to continue in the long-term, namely support for local communities and wildlife conservation.

SESSION B: Urban Planning & Restoration

Moderator: Cullen Hanks, Texas Parks and Wildlife Department

Lessons From the High Desert

Patrick Gay, ASLA, 4110 Rio Bravo, Suite 3100; El Paso, TX 79902

George Radnovich, ASLA, Sites Southwest, 121 Tijeras NE, Su. 3100, Albuquerque, NM 87102

The High Desert Community in mile high Albuquerque, NM is a 1,000-acre parcel which encompasses about 2,300 dwelling units. The development was planned and implemented to preserve natural arroyos as open space corridors for stormwater recharge, wildlife, and trails. The arroyos connect greater Albuquerque to the Sandia Mountain Wilderness

through the community. Phasing and implementation also included natural parks, streetscapes and additional enhanced open space. Disturbed infrastructure areas were reclaimed or revegetated into native ecosystems. Sites Southwest responsibilities included assisting in the authorship of the approved plant list and landscape guidelines, sitting on the design review committee for the community, and designing sustainable landscapes and irrigation for its many projects. All landscaping is drought tolerant and primarily native to the region. Water from roadways, roofs and other impermeable surfaces is harvested for re-use within the landscape. Habitat plantings and drinkers were provided throughout the community to encourage continued wildlife use of the area. All materials used are in keeping with the natural environment, many of which were recycled or reused from on-site. An interpretive signage system was also implemented throughout the community to educate residents to the benefits of regenerative landscapes and low impact development elements. We present lessons learned from our 13 years of work for this community. This project is now held as the model and standard for sustainable communities in the region. The work facilitated natural ecological processes including healthy lifestyles, wildlife use, and water quality.

Bird Diversity Indicates Ecological Value in Urban Home Prices

Michael Shiroya, Texas Tech University, Department of Agricultural and Applied Economics, Lubbock, TX 79409

Michael Farmer, Texas Tech University, Department of Agricultural and Applied Economics, Lubbock, TX 79409

Mark C. Wallace, Texas Tech University, Department of Natural Resources Management, Lubbock, TX 79409

Commonly, public greenspaces have been considered to contribute to urban home prices; yet urban ecologists also have known that not all greenspaces are equally valuable, and that some important ecological spaces appear on private residences. This work examines directly whether using bird relative abundance and species richness adds new information regarding ecological values that improve urban housing prices. We collected information on a sample of home sales in Lubbock, Texas; conducted bird counts in the vicinity of each sale; and recorded the numbers and the variety both ubiquitous and desirable bird species. Finally, we used GIS to estimate tree cover in the immediate area surrounding each parcel.

Using this disaggregated data, we constructed a predictive model for bird relative abundance and species richness (Bird) models based on AICc. The predicted value for bird improves average home prices by \$32,028 from the addition of one more desirable bird species observed. Sharper parcel level ecological data revealed that it was the features of human created landscapes among the surrounding houses that were important in explaining variation in the broad ecological indicator and in home prices, while public greenspace added little value. This deliberately simple but economical ecological indicator served to redirect attention to the composition of local landscapes in specific areas rather to open greenspace per se and to household diversity to understand this complex feedback relationship between home prices and this broad ecological indicator.

Beyond Remediation: New Beginnings – The Woodlawn Wildlife Area

Jeffrey Popp, Wildlife Habitat Council, 8737 Colesville Road, Suite 800, Silver Spring, MD 20910

The Woodlawn Wildlife Area is a former municipal landfill that is listed on the National Priorities List (NPL, a list of Superfund sites) due to groundwater contamination. Bridgestone Americas Holding, Inc. (Bridgestone) has assumed responsibility for managing the site and an adjacent natural area. As part of their management approach, Bridgestone is implementing a wildlife habitat enhancement and community environmental education program in partnership with the Wildlife Habitat Council (WHC) to transform the land into a thriving wildlife area and to establish a unique natural resource in Cecil County, Maryland. WHC's core programs, Wildlife at WorkSM and Corporate Lands for LearningSM frame efforts at the site, and are driven by strong participation from local residents, community groups, area schools, and Master Gardeners. Bridgestone and WHC work with local community partners to implement a wildlife habitat enhancement program that includes planting native wildflowers, shrubs, and trees on and around the landfill, installing nest boxes for Eastern Bluebirds, American Kestrels, and Eastern Screech-Owls, and controlling invasive nonnative plant species. As a WHC-managed program, New BeginningsSM – The Woodlawn Wildlife Area provides insights and best practices for other WHC members in the development of their wildlife habitat management plans.

Natural Co-Existence or Confinement? Challenges in Integrating Bird-Life Concerns into Urban Planning and Design for Zimbabwe

Trymore Muderere, 6655 Vumba St, Zimre Park, Ruwa, Harare, Zimbabwe; +263 0775 031 477;
muderere.trymore@gmail.com

This paper examines challenges associated with integrating wildlife concerns into the urban design and planning process for Zimbabwe. It indicates the manner in which urban wildlife has involved either by natural coexistence or confinement since the establishment of urban centers in the country. Existing positions on environmental policies and other institutional frameworks in Zimbabwe have largely ignored the needs of not only urban wildlife but Bird-life specifically. For most planners the city is a place for commerce, industry, transport, small-scale manufacturing and trade, housing, recreation and sports. Yet wildlife is often ignored. These uses have thus put wildlife concerns peripheral in the planning processes. Furthermore, lack of discussion on the status of urban wildlife in Zimbabwe does not lend to the formulation of wildlife sensitive policies or mechanisms of intervention oriented towards wildlife. The reasons which can be noted prima facie include culture of the people (perceptions), lack of proper design and planning guidelines, uncoordinated approaches to conservation, predation, fragmented habitats vi-avis competing uses to name but a few. It puts into perspective Bird-life concerns through a case study of Monavale bird habitat in Harare.

Urban Biodiversity Management of Guwahati City: The Gateway to North East India

Utpal Bora and Shamim Rahman, Department of Biotechnology, Indian Institute of Technology Guwahati, Guwahati: 781039, Assam, India

Parimal Chandra Bhattacharya, Wildlife Trust of India, Guwahati, Assam, India

Guwahati is the gateway to the entire North East India. Surrounded by 18 hills, 19 reserve forests and with 2 wildlife sanctuaries, Guwahati is a unique urban biodiversity hub due to its strategic bio geographic features. Although an ancient city, the process of rapid urbanization of Guwahati began in the early 1980s after the shifting of the modern day capital of Assam from Shillong. Along with the opening of new economy, Guwahati has turned also into a centre for trade, tourism and education. About 40 species of mammals, over 30 species of snakes, 20 species of amphibians, 6 species of turtle and at least 15 species of lizards apart from 200 bird species are presently prevalent in the city. The River Brahmaputra, a further entity for ichthyofaunal and other aquatic bio resources, flowing through the city is the source for the water supply of the city population. Hoolock Gibbon (*Hoolock hoolock*), the only ape found in India had been reported from the city fringes. This is the home to many IUCN threatened species such as Asiatic Elephant (*Elephas maximus*), Leopard (*Panthera pardus*), Clouded Leopard (*Neofelis nebulosa*), Pangolin (*Manis pantadactyla*), Slow Loris (*Nycticebus coucang*), Greater Adjutant Stork (*Leptoptilos dubius*), Golden Langur (*Trachypithecus geei*) etc. Guwahati has five major wetlands (two already wiped out). Among these Deepor Beel Wildlife Sanctuary, acting as natural kidney of the city, is the only Ramsar site of Assam. It is a bird paradise with 170 species of resident and migratory birds including endangered species. 50 species of fishes, 12 species of reptiles and 6 species of Amphibians, along with 155 species of aquatic macro-biota have been reported from the sanctuary. The State Zoo cum Botanical Garden is natural in its landscape and home to several species of plants and animals. Rapid urbanization as well as the huge migration of people to the city for their livelihood has accelerated the problem of encroachment in the hills and forests. Straying Leopards and their conflict with human are common in the Fatashil Ambari, Khanapara, Kalapahar, Santipur area of the city. Human-elephant conflicts and elephant deaths by train hit at elephant corridors near Amchang and Deepor Beel wildlife sanctuary, human-monkey conflict right in the city centre and poaching of small animals are some serious threats to biodiversity of the city. With 3 new planned satellite towns the city is currently undergoing rapid expansion. A total of 66 km² of rural/semirural/forest/wetland area is planned to be urbanized by 2025. This is going to create more man-animal conflicts for which adequate urban wild life management plans is the need of the hour.

SESSION C: Feral Hogs and Cats: Case Studies of Feral Animals in Urban Areas

Moderator: Brett Johnson, Urban Wildlife Program, Texas Parks and Wildlife Department

Evolution of an Urban Wild Pig Control Program: Two North Texas Examples

Robert Denkhous, Fort Worth Nature Center & Refuge, 9601 Fossil Ridge Road, Fort Worth, TX 76135

Rick Salas, City of Southlake, 2100 W. Southlake Blvd., Southlake, TX 76092

North Texas urban areas have been experiencing wild pig problems since at least 1999. The Fort Worth Nature Center and Refuge (FWNC&R) was the first to initiate a control program beginning in 2003. The City of Southlake was the second beginning in 2008. While the two entities have used the same basic techniques to control wild pig populations, they were forced to travel greatly different paths to obtain permission and public acceptance. Other north Texas communities are now beginning to initiate control programs which have been facilitated by the FWNC&R and Southlake experiences.

Characterization of Wild Pig-Vehicle Collisions

John J. Mayer, Savannah River National Laboratory, Washington Savannah River Company,
P. O. Box 616, Aiken, SC 29808

Paul E. Johns, Carolina Wildlife Consultants, 2441 Williston Road, Aiken, SC 29803

Wild pig (*Sus scrofa*) collisions with vehicles are known to occur in the United States, but only minimal information describing these accidents has been reported. In an effort to better characterize these accidents, data were collected from 179 wild pig-vehicle collisions from a location in west central South Carolina. Data included accident parameters pertaining to the animals involved, time, location, and human impacts. The age structure of the animals involved was significantly older than that found in the population. Most collisions involved single animals; however, up to seven animals were involved in individual accidents. As the number of animals per collision increased, the age and body mass of the individuals involved decreased. The percentage of males was significantly higher in the single-animal accidents. Annual attrition due to vehicle collisions averaged 0.8 percent of the population. Wild pig-vehicle collisions occurred year-round and throughout the 24-hour daily time period. Most accidents were at night. The presence of lateral barriers was significantly more frequent at the collision locations. Human injuries were infrequent but potentially serious. The mean vehicle damage estimate was \$1,173.

Wild Pig Attacks

John J. Mayer, Savannah River National Laboratory, Washington Savannah River Company,
P. O. Box 616, Aiken, SC 29808

Attacks on humans by wild pigs (*Sus scrofa*) have been documented since prehistoric times. Aside from a few medical reports describing the injuries resulting from such attacks, studies characterizing these incidents are lacking. In an effort to better understand this behavior, information was collected from 330 wild pig attacks on humans. Similar to studies of large predator attacks on humans, data came from a variety of sources. The various attacks compiled occurred in five geographic realms including Australia, Eurasia, North America, Oceania and South America. Most attacks occurred within the native range, and specifically in rural areas. The occurrence was highest during daylight hours. The majority happened under non-hunting circumstances, and appeared to be unprovoked. Wounded animals were the chief cause of these attacks in hunting situations. The animals involved were typically solitary, male, and large in size. The fate of the wild pigs involved in these attacks varied depending upon the circumstances. Most human victims were adult, male, traveling on foot, and alone. The most frequent outcome for these victims was mauling. Resulting injuries ranged from none to fatal. Most of the mauled victims only had injuries to one part of their bodies. Legs/feet were the most frequent body part injured. Injuries were primarily in the form of lacerations and punctures. Fatalities were typically due to blood loss. In some cases, serious infections or toxemia resulted from the injuries. Data from the Savannah River Site, SC, showed these attacks to be rare.

The Influence of Socio-Demographic Factors on Free-Roaming Cat Densities in an Urban Ecosystem in Israel

Hilit Finkler and Joseph Terkel, Tel Aviv University, Zoology Department, 69978, Israel

Erez Hatna, Wageningen University, Department of Environmental Sciences, The Netherlands

Management of free-roaming cats is necessary for reasons of public health, risk of wildlife predation and cat welfare. Trap-neuter-return programs are used as the main control strategy in urban areas. However, their efficacy cannot be evaluated without estimates of cat abundance and knowledge of anthropogenic influences. We estimated free-roaming cat population density in eight residential neighbourhoods in Tel Aviv (four in the north and four in the south), Israel, and investigated this density in relation to socio-demographic factors: neighbourhood socio-economic status (SES), housing type, human density and percentage of residential and commercial areas. Southern neighbourhoods (low SES) showed higher kitten density and lower neutered cat proportions compared to northern neighbourhoods (high SES). Higher adult densities featured in mixed profile neighbourhoods of residential and commercial areas compared to solely residential neighbourhoods. Using the regression analysis the entire free-roaming cat population was extrapolated to 39,000 cats. The results suggest that cat densities depend in part on socio-demographic factors, specifically on neighbourhood SES and the proportion of residential area. Our findings can be applied to Tel Aviv and other metropolitan areas with cat overpopulation problems to improve cat management, by focusing on neighbourhoods hosting higher cat densities; as well as to improve cat welfare by focusing on neighbourhoods with lower neutering rates and higher kitten densities.

SESSION D: Urban Wildlife Conflict Management

Moderator: Tom Harvey, Texas Parks and Wildlife Department

When Good Birds Go Bad: Human-Bird Conflicts in Residential & Commercial Landscapes

Rob Fergus, Bird-B-Gone, Inc., 51 S. 3rd Street, Perkasie, PA 18944

Since June 2010, Bird-B-Gone Inc. has maintained an online public query form that has received over 1,600 queries related to human-bird conflicts in residential and commercial landscapes. An analysis of these queries provides one measure of the types of conflicts and species involved in nuisance bird complaints, as well as the cultural expectations and occasional ecological misunderstandings that lead to human-bird conflicts. This study quantifies the bird species, landscape features, and cultural issues involved in human-bird conflicts most frequently reported to the Bird-B-Gone website, and discusses opportunities for further research and public education in addressing attitudes and expectations regarding human-bird interactions in American cities.

Help! Some Wild Animal is Eating the Roses in My Backyard! Towards an Urban Wildlife Management Concept in Baden-Wuerttemberg, Germany

Geva Peerenboom and Ilse Storch, University of Freiburg, Germany, Department of Wildlife Ecology and Management

Andy Selter and Ulrich Schraml, University of Freiburg, Germany, Institute of Forest and Environmental Policy

In Germany, as throughout Europe, urban wildlife is on the rise. Species such as the wild boar (*Sus scrofa*) and the red fox (*Vulpes vulpes*) have discovered urban areas as new habitats. This has caused increased concern and conflict, ranging from noise and smell nuisances and damages in and around homes, to disease transmission and serious accidents. Current legislation, administration and management structures appear inadequate efficiently to tackle the problem, and there is growing confusion on how to deal with urban wildlife conflicts. Two examples of the many unsolved issues are: 1) In Germany, liability for most wildlife damages rests with the owner of the hunting right. However, as hunting is not permitted within city limits, wildlife damage becomes nobody's responsibility. 2) Citizens ask for population control, but strictly oppose any lethal removal. Thus, government agencies need to develop urban wildlife management concepts. In an ongoing project funded by the state government of Baden-Württemberg, we are working towards a basis for such a concept. Starting with qualitative expert interviews, where main conflict types and management deficiencies will be identified, we plan quantitative questionnaire surveys with involved persons, as well as media analyses to assess conflicts and management strategies.

Limiting the Use of Lethal Control of Black-Tailed Prairie Dogs (*Cynomys ludovicianus*) for Public Improvement Projects

Valerie Matheson, City of Boulder, Community Planning and Sustainability Dept., Boulder, CO 30306

The City of Boulder has long promoted the protection of wildlife habitat and humane non-lethal control of wildlife when consistent with other environmental, social and economic goals of the community. In early 2000, the City Council adopted a Wildlife Protection ordinance which led to the 2006 approval of an Urban Wildlife Management Plan. Collectively these documents limit the use of lethal control of birds and prairie dogs within the city and on city-owned land. Implementation of the ordinance and the plan over the past few years has presented challenging circumstances particularly when public improvement projects are proposed in active prairie dog colonies. In 2009, the city installed a solar panel garden comprised of 4,464 solar panels on 930 support posts in an active black-tailed prairie dog colony without the use of lethal control or relocation of prairie dogs to another site. The city has successfully used a passive relocation technique called Reverse Dispersal Translocation (RTD) to temporarily shut down a portion of the colony's burrow entrances and allow for temporary ground disturbance to install the solar array. The city has been less successful in using RTD to limit colony expansion. The requirement to limit lethal control of prairie dogs has presented opportunities to develop unique mitigation techniques that take into consideration prairie dog biology and behavior, and accomplish multiple city goals.

The Use of Flow Devices to Reduce Road Maintenance and Repair Costs Associated with Beaver Activity at Chronic Damage Sites in Virginia

Stephanie Boyles, The Humane Society of the United States, 700 Professional Drive, Gaithersburg, MD 20879

Road damage caused by beavers is a costly problem in the U.S. Population control and dam removal are the most common methods used to prevent and alleviate road damage associated with beavers, but at chronic damage sites, it may be more effective and economical to use flow devices to protect road structures and critical areas adjacent to roads. To determine the potential benefits of using flow devices, from June 2004 to June 2009, we installed flow devices at 26 chronic beaver damage sites identified by Virginia transportation department maintenance personnel. Following installations, study sites were monitored to determine flow device performance and to document any required maintenance and repairs. As of September 2010, flow devices at 23 of 26 sites were functioning properly and meeting management objectives. The costs to install and maintain flow devices at 22 of 26 sites were significantly lower than preventative road maintenance, damage repairs, and/or population control costs prior to flow device installations. Since 2004, we estimate that flow devices installed at these sites have reduced road maintenance costs by \$737,000, and over the next five years, we project that these devices could potentially reduce these costs by more than \$1.27 million dollars. Given the low costs associated with installing and maintaining flow devices, transportation agencies may substantially reduce road maintenance costs by incorporating the use of flow devices into road planning and beaver management programs.

Assessing Aggressive and Passive Behaviors of Urban Nesting Mississippi Kites

Ben Skipper, Texas Tech University, Department of Natural Resources Management, Lubbock, TX 79409

Clint Boal, Texas Tech University, USGS Texas Cooperative Fish and Wildlife Research Unit, Lubbock, TX 79409

Mississippi kites (*Ictinia mississippiensis*) have become a common breeding raptor in many urban areas of the southern Great Plains. Although a majority of kites breed inconspicuously in the urban environment, some individuals aggressively defend nest sites against pedestrians who venture into breeding areas, thus causing wildlife-human conflict. Why some individuals respond aggressively to pedestrians and others do not is currently unknown. In 2009, we initiated a study to examine patterns of aggression in a population of kites breeding in Lubbock, TX. Specifically, we focused on vegetative and anthropogenic characteristics of kite nesting areas that may be predictive of aggressive behaviors and examined correlates of site and mate fidelity with aggressive behaviors in a banded subpopulation of 12 nests. Aggressive and passive nest sites were similar for most variables measured except for nest-tree height and distance to nearest building. Nests where aggressive behaviors were consistently displayed were more likely to be re-occupied by at least one individual from the previous year than passive nests (83 vs. 33%, respectively). Additionally, mate fidelity was greater at aggressive nests than passive nests. Taken together, our data suggest that aggression in kites is shaped more by characteristics of individual kites than by environmental features such as vegetation and anthropogenic structures.

TUESDAY, MAY 24, 2011

SESSION E: Integrating Wildlife Conservation into Neighborhood Design (FULL DAY)

Moderator: Chris Moorman, Ph.D., and Nils Peterson, Ph.D., North Carolina State University

A Cross City Comparison of Urban Birds

Charles Nilon, University of Missouri-Columbia, Department of Fisheries and Wildlife, 302 Anheuser-Busch Natural Resources Building, Columbia, MO 65211-7240

Christopher A Lepczyk, University of Hawaii at Manoa, Department of Natural Resources and Environmental Management, 1910 East-West Road, Honolulu, HI 96822

Paige S. Warren, University of Massachusetts-Amherst, Department of Environmental Conservation, Holdsworth Hall, Amherst, MA 01003

Myle F. Aronson, Hofstra University, Department of Biology, 325 Gittleson Hall, Hempstead, NY 11549

Mark A. Goddard, University of Leeds, Institute for Integrative and Comparative Biology, Leeds, UK, LS2 9JT

Madhusudan Katti, California State University, Department of Biology, Fresno, 2555 E San Ramon, Fresno CA 93740

Ian MacGregor-Fors, Red de Ambiente y Sustentabilidad Instituto de Ecología, A.C. (INECOL), Ant. Carretera a Coatepec 351, El Haya, Xalapa 91079, Veracruz, México

During the past decade a great deal of effort has focused on understanding the relationships between housing and wildlife from rural through urban areas. While several general patterns have emerged, much remains unknown about urban wildlife species in general, and urban birds in particular. As part of a large initiative to understand birds in cities, we are examining how urban bird guilds and natural history compare across cities around the world. Looking across 12 cities from several continents, we will discuss the patterns found and possible drivers of bird diversity in cities.

Conserving Urban Wildlife? Creating Green Infrastructure is Only the First Step

Mark Hostetler, University of Florida, Department of Wildlife Ecology & Conservation, P.O. Box 110430, 110 Newins-Ziegler Hall, Gainesville, FL 32611-0430, United States

Urban planning efforts to conserve urban wildlife have often concentrated on establishing protected natural areas and corridors. While green infrastructure is important, it is critical that surrounding neighborhoods and commercial areas have minimal impacts on conserved areas. Everything from invasive exotics to stormwater runoff can degrade the biological integrity of green infrastructure. In this presentation, I discuss future research and strategic directions to achieve a systems approach that includes the design and management of nearby built areas to be compatible with green infrastructure. Planners, developers, researchers, and residents all play a role in shifting conventional development inertia to something more compatible with conserving urban wildlife and biodiversity. Design, construction, and post-construction phases of urban development are key, but urban conservation efforts often concentrate on design and ignore the other two phases. I outline a range of processes, research, policy tools and educational strategies that could be used to engage key stakeholder groups across all phases of urban development. In particular, I describe the offering of a 4-hour continuing education course titled Conserving Biodiversity in Subdivision Development. This course targets planners and built environment professionals and it is being offered nationally to help municipalities develop design and management strategies that maintain functional green infrastructure.

Wildlife in Neighborhoods: Management and Conservation of Everyday Nature

Charles Nilon, University of Missouri, Department of Fisheries and Wildlife Sciences, 302 ABNR, Columbia, MO 65211-7240

Wildlife ecologists and managers often focus their efforts on new subdivisions and developments where the results of urban wildlife conservation research can be incorporated into best practices for design and management. However, wildlife conservation efforts in older residential neighborhoods and neighborhoods in inner cities are important and offer unique opportunities to benefit both wildlife people. Habitats in these neighborhoods have been shaped by previous and current residents and planning and management decisions. Recent research in Columbia, MO and Baltimore, MD

has looked at the variables associated with bird and mammal abundance at neighborhood and lot scales within inner city residential areas. Studies of birds and bird habitats in Baltimore neighborhoods have identified three types of residential areas that support different bird communities. Columbia neighborhoods differ at neighborhood and lot scales along a socioeconomic gradient, and these differences create different habitats for mammals including gray and fox squirrels. Our findings indicate that conservation efforts should go beyond simple application of best management practices and consider the different settings and contexts in which habitats and species occur among residential neighborhoods.

Does Public Education Regarding Native Landscape Design Influence Residential Landscaping Preferences?

M. Nils Peterson and Shari L. Rodriguez, North Carolina State University, Fisheries, Wildlife and Conservation Biology Program, Department of Forestry and Environmental Resources, Raleigh, NC

Brandi Thurmond, North Carolina State University, Department of Mathematics, Science, and Technology Education, Raleigh, NC

Urban sprawl is making residential landscaping a major concern with respect to wildlife conservation. In the US, residential landscapes typically consist of maintained lawns with few trees, shrubs, or native plants; such designs provide poor wildlife habitat. We conducted a study of Raleigh, North Carolina residents (n=180) to determine how educating residents about the wildlife-related benefits of native landscaping influenced their preferences for landscaping. We measured preferences using a 7 point scale, where 1=strongly do not prefer and 7=strongly prefer. We used paired sample t-tests to determine if landowner preferences for 0, 50, 75 and 100% native landscape designs changed after they were informed about the benefits native plants provide for wild birds. Prior to educating respondents, the 50% native landscaping design was the most preferred and the 100% was the least preferred. Preferences for all 4 native landscaping designs were found to be significantly different after providing information about wildlife benefits associated with native landscaping. Neutrality changed to opposition for the 0% native landscaping design, while opposition changed to support and neutrality for the 75% and 100% designs, respectively. The 50% design remained the favorite despite a decline in support. These findings suggest support for native landscaping is already much higher than reflected by typical residential landscaping, and that education efforts regarding the benefits of wildlife-friendly landscaping can dramatically alter public preferences for native landscaping.

The Ecology of Suburbia: Why Some Birds Thrive in Human-Dominated Landscapes and Others Don't

Robert B. Blair, University of Minnesota, Department of Fisheries, Wildlife, and Conservation Biology, 1980 Folwell Avenue Suite 200, Saint Paul, MN 55108

Suburban and urban development change the landscape in predictable ways across North America. With this change come predictable shifts in the avian community: some species of birds disappear with the slightest alteration of habitat, others increase in abundance with low levels of change but decrease with more severe change, and others thrive in the most heavily developed landscapes. In this presentation, I discuss research from urban gradients in three different ecoregions of the United States (Ohio, Minnesota, and California). All three gradients exhibit similar patterns of extinction of native species followed by invasion of common species and subsequent biotic homogenization with urbanization. This patterning suggests that suburban land uses, those represented by the intermediate levels of development on the gradients, are a point of extirpation for woodland birds as well as an entry point for invasive species into urban systems. Furthermore, there are consistent patterns in the functional characteristics of the bird communities that also shift with intensifying urbanization, providing insight on the possible mechanisms of homogenization and community structure. I conclude with speculation on how suburban landscapes can better serve the regional conservation of birds overall.

Seeing Beyond the Glare of Eco-Bling: Sensible Leadership in Green Building

Peter Pfeiffer, Barley & Pfeiffer Architects, 1800 West 6th St, Austin, TX 78703

The green building movement is here to stay – as well it should be to right a ship that has gone off course for the past quarter century or more. Architects and many builders have the education and experience to lead the way toward creating smarter buildings and developments but too often we abdicate their responsibility to product suppliers and others not as well qualified. Why?

The integrated approach to building design learned in architecture school - from well-thought-out programming to appropriately integrated building sciences – uniquely qualifies many architects and builders for the very necessary role of the “Inspired Generalist.” However, this leadership role is too often under-articulated and under-appreciated. Let’s change that! The complexity of how various design decisions and building components interact with each other to effect occupant health & comfort; building durability & maintenance; conservation of natural resources & habitat; waste management; water conservation; energy efficiency—including US energy independence and global warming, will be addressed in an enlightening format that is extremely relevant to our place in society as a leading profession today as well as to the practice of responsible residential and light commercial architecture.

Identifying Strategies to Facilitate Implementation of Conservation Subdivisions

Chris Moorman, North Carolina State University, Department of Forestry and Environmental Resources, Raleigh, NC 27695

Rapid urbanization, population movement into suburban and rural areas, and the ensuing land use changes threaten biodiversity and availability of open space. Conservation subdivisions (CSDs) have emerged as an option for communities to conserve open space, maintain scenic views, and conserve wildlife habitat without compromising property rights or economic return. CSDs use a design strategy that attempts to conserve undivided, buildable tracts of land as communal open space for residents. Despite their potential benefits, CSDs are an under-used option in most communities. We identified the barriers to successful implementation of conservation subdivisions and then examined how four communities overcame those barriers. To identify the key barriers, we surveyed people who attended one of nine workshops promoting conservation subdivision design. Attendees included planners, developers, real estate professionals, conservation group members, and elected officials. Respondents rated the lack of incentives for developers to choose CSDs over conventional development as the most important barrier. Other barriers (in order of ranking) were the perception that CSDs are more expensive to build, lack of interest from elected officials, smaller lot sizes, restrictive zoning, and concerns over the long-term management of open space. The four case study communities overcame resistance from developers and landowners through informal meetings, charettes, and workshops focusing on the environmental and economic benefits of CSDs. The successful communities had support from elected officials and planning staff to devote the necessary resources to rewrite ordinances, review sketch plans, and perform site visits. Also, the case study communities provided incentives such as density bonuses and an expedited approval processes to promote CSDs. To encourage CSDs, we suggest that communities educate developers, elected officials, and citizens about CSDs and rework the approval process to favor CSDs over conventional developments.

Development Pattern and Wildlife Habitat Protection in County Conservation Design Regulations

Sarah E Reed, Colorado State University, Department of Fish, Wildlife, and Conservation Biology, Fort Collins, CO 80523-1474

Jodi A Hilty, Wildlife Conservation Society, North America Program, 301 North Willson Ave., Bozeman, MT 59715

Private lands provide a disproportionate amount of high-quality habitat for wildlife species and ecosystem services that are critical for human well-being. Although private land conservation efforts have grown considerably in recent years, land is being converted to residential and urban development at nearly twice the rate that it is being protected in the United States. Conservation development—which protects or restores the ecological resources of a property and clusters housing development on the remainder of the site—has emerged as a promising strategy for incorporating conservation objectives into development practices. We collected development regulations from 414 counties in 11 western states and found that nearly one-third of counties have adopted ordinances that establish guidelines or create incentives for conservation development. We reviewed these regulations to quantify their conservation objectives, development restrictions, and requirements for ecological site analysis and land protection. In geographic information system (GIS) simulations of large parcel subdivision, we demonstrate the development patterns likely to result from the application of conservation design guidelines at the site- and landscape-levels. We evaluate the sensitivity of the resulting development patterns to key elements of the conservation design guidelines, and we compare the subdivision scenarios on the basis of the amount and structural connectivity of protected land remaining. We conclude with recommendations for how conservation design regulations could be improved to increase their effectiveness for protecting wildlife habitat and other ecological resources on private lands.

Bird Friendly Building Guidelines

Jennifer Young, Lake Flato Architects, 311 3rd St., San Antonio, TX 78205

“There is nothing in which the birds differ more from man than the way in which they can build and yet leave a landscape as it was before” ~Robert Lynd, *The Blue Lion and Other Essays*

Specialists estimate that as many as a billion birds die each year in the United States from colliding with the built environment. This affects a tremendous diversity of species from hummingbirds to hawks, including endangered species. During the day birds can fly head-on into windows, confused by the reflection of trees, clouds or skyline in windows. At night, ornamental lighting on skyscrapers can confuse migrating birds. This session will highlight the main problems as well as promote measures to protect our bird species through more thoughtful planning, design and operation of buildings.

How an Urban Playscape Can Be a Natural Oasis for Learning and Play

Tenna Florian, Lake Flato Architects, 311 3rd St., San Antonio, TX 78205

What are natural playscapes: If you've ever climbed trees, rolled down hills, scrambled up rocks, made mud pies, dammed up water, hid in grass, played house in bushes, built snow forts, dug in sand, played in dirt, planted seeds, jumped in leaves, tracked animals, or had fun outside in other, similar ways, you've experienced natural play... The majority of today's playgrounds lack any sense of place and creativity. In order for kids to gain appreciation of nature through play, a movement toward more natural playscapes is developing; however, this movement is seemingly in opposition to municipalities' desires to make playgrounds "safe" and easy to maintain. The plastic play equipment and rubberized flooring that are a result of these desires allow for little creativity and are devoid of nature. Creating urban and neighborhood playgrounds that integrate fruit trees, vegetable gardens, and vegetation that can create space (edible vine tunnels, weeping willow caves, native grass fields, etc.) and habitat allows children an opportunity to engage with and learn about nature while also benefiting the city as a whole by reducing impervious cover, reducing the urban heat island effect, and improving the health and well being of its citizens.

Providing a Place for Wildlife in Urbanized Environments Through a Certified Wildlife Habitat Program

Steffenie Widows and David Drake, University of Wisconsin-Madison, Department of Forest and Wildlife Ecology, 120 Russell Laboratories, 1630 Linden Drive, Madison, WI 53706

Habitat loss leading to the extinction of species is an environmental problem that stems from development needs to satisfy human population growth. The majority of the world's population lives in urban areas that typically provides relatively little valuable wildlife habitat. The National Wildlife Federation (NWF) sought to provide a wildlife friendly solution to the growing problem of suburbia through the creation of their Certified Wildlife Habitat™ program. The objective of our research was to determine if yards certified in the NWF's program offered more habitat beneficial to wildlife than non-certified yards in the same neighborhood. Fifty certified and 100 non-certified yards in the Orlando area were evaluated for select habitat components. Overall, certified yards provided significantly more wildlife habitat than non-certified yards. For example, natural food sources were twice as abundant in certified yards than non-certified and only 40% of certified yards could be classified as having mostly non-native plants, whereas 75% of non-certified yards fit this classification. Additionally, only 40% of non-certified yards provided a water source compared to 100% of certified yards. The Certified Wildlife Habitat program is a successful effort, but needs to have a larger, more contiguous landscape scope.

Implementing Conservation Subdivisions in Texas

John Davis, Texas Parks and Wildlife Department, 4200 Smith School Rd., Austin, TX 78744

The phenomenon of conservation subdivisions has increased in popularity in various parts of the U.S. but it has yet to gain significant momentum in Texas. Despite the success of conservation subdivisions in Texas, several factors have combined to limit the proliferation of this development model. First, Texas is a "home rule" state meaning that municipi-

palties are granted zoning authority while counties are granted few planning powers to manage growth or development patterns. This creates difficulty for municipalities trying to improve the design and planning of development. As a city creates more stringent development regulations, developers shift attention to lands under county jurisdiction where there are fewer regulations. Second, though conservation subdivision design often produces a better product, it requires more analysis of the landscape during the design phase and, therefore, adds a layer of uncertainty to the developer's process. Local city councils tend to be "developer friendly" in many cities. Therefore, they adopt development regulations to speed the process. Positive steps are being taken to eliminate obstacles that conservation subdivision design faces in Texas. However, until these issues are addressed, it appears that conservation development will remain a niche market for the wealthy.

The Woodlands: A Model for Urban Wildlife Habitat Preservation

Elise M. Bright, Department of Landscape Architecture and Urban Planning, Texas A&M University, College Station, TX 77843

Texas boasts one of the finest examples of utilizing wildlife habitat information to shape the patterns of a major urban development. The Woodlands is a community of more than 80,000 people, along with extensive retail and office development, which was planned (using the principles outlined in Ian McHarg's landmark book *Design with Nature*) with a goal of preserving as much of the natural wildlife habitat and other environmentally sensitive areas as possible. Since the project's initial planning, many challenges to that goal have been overcome. The community stands out today as a haven for urban wildlife; even the endangered red-cockaded woodpecker and the bald eagle cohabit with the area's many human residents. The Woodlands serves as a national model for development that minimizes the impact to wildlife habitat by preserving approximately 40% of the 17,000 acres included in the community. Wildlife habitat improvement continues to this day with the development of the George Mitchell Nature Preserve. The sound planning in this community has allowed property in The Woodlands to retain more of its value during the recession than any other development in the state, and has also facilitated natural ecological processes including improved water quality and excellent flood protection even during Hurricane Ike. This oral presentation will begin with discussion of how this community was initially planned for wildlife, using original drawings from the landscape planners; how the plans have been changed in the ensuing years; and how the principles of urban wildscape, land suitability, ecological planning and sustainable development were implemented in an area with few government land use control powers using land dedication, covenants and deed restrictions, neighborhood governance, and HOA enforcement. There are many lessons in this example that could be applied throughout the state and the nation.

Thriving By Living Green: Creating Your Sustainable Home & Future

Laverne A. Williams, Environment Associates, Architects & Consultants, 5828 Langfield Rd., Houston TX 77092

By applying Intentional Design for Passive Sustainability, wildlife and humans can thrive in a world where life on Earth is being challenged perhaps in more ways than ever before. Based upon nearly forty years of applied experience by the author, Intentional Design for Passive Sustainability (IDPS) enables anyone to improve their quality of life at home. The result, more often than not, is dramatically small energy bills, healthier living, and significantly lowered overall living costs. Whether designed into new homes or into remodeling projects, locations can be urban, suburban, or anywhere. IDPS uses beyond net zero, energy producing architectural design and healthy green building methods, permaculture, holistic resource management principles, and bioneering methodologies to encourage highly productive and resilient built habitats for us as well as creating resilient natural habitats for urban wildlife. A major objective of IDPS is to create durable, healthy human abodes that require little or no cooling or heating or use of fossil energy fueled power for which to live comfortably, while also capturing all the water we need and providing places where most of our own fruit and vegetables can be grown in some cases with so much abundance we have plenty to share or sell. Having been awarded the preeminent green building awards available nationally and locally, many examples created by the author will be used to illustrate what has been done and what is possible.

SESSION F: Urban Coyotes

Moderator: Stewart Breck, Ph.D., National Wildlife Research Center

Uneasy Neighbors? A Review of Coyotes in Urban Landscapes

Stanley D. Gehrt, Max McGraw Wildlife Foundation, Dundee, IL 60118

Seth P. D. Riley, National Park Service, Santa Monica Mountains National Recreation Area, 401 W. Hillcrest Dr., Thousand Oaks, CA 91360

Coyotes are relative newcomers to metropolitan areas across much of North America, mostly occurring only in the past 20 years, except in places in Los Angeles where they have always been part of the city landscape. The apparent success of this species has been met with strong negative and positive responses from the public. Recent ecological research from Chicago, Los Angeles, and other areas suggests that coyotes are relatively unique in being able to exploit developed areas while largely avoiding people. Long-term research in Chicago reveals that coyotes may live in developed areas without coming into conflict with people, but that the population has continued to increase, and an equilibrium has not yet been reached. Coyotes have been coexisting with humans near Los Angeles for many decades, and despite the often sensational news coverage from Southern California, a long-term research project found that the vast majority of coyotes do not behave aggressively towards, or come into conflict with, people. Unfortunately, almost no scientific information exists about the ecology and behavior (both of humans and coyotes) behind coyote-human conflicts in urban areas. Gathering this kind of information in a consistent and rigorous way, including on methods for potentially reducing or mitigating conflicts when they do occur, is a critical need.

Individual Variation in Coyote (*Canis latrans*) Boldness and Aggression: Implications for Urban Conflict and Management

Lynne Gilbert-Norton, Utah State University, The Berryman Institute, Department of Wildland Resources, Logan, UT 84322

Julie K. Young, USDA-WS-National Wildlife Research Center and Department of Wildland Resources, Utah State University, Logan, UT 84322

Stewart W Breck, USDA-WS-National Wildlife Research Center, Fort Collins, CO 80521

The range expansion of coyotes (*Canis latrans*) coincides with unprecedented expansion of human-dominated landscapes, and human-coyote conflict has increased in urban areas. Our understanding of which animals are predisposed to cause conflict, or why such conflict occurs however, is limited. Furthermore, urban environments present a unique set of challenges in resolving conflict that research is only beginning to address. Population level approaches to conflict resolution can be impractical and contentious in many urban settings. A more effective solution is the selective control or removal of specific individuals from the population. We highlight a growing body of captive research that begins to address many of the problems faced by wildlife managers in urban environments. We present research that aims to measure individual variation in coyote behavior (boldness, aggression, and exploration) across a variety of contexts. Preliminary findings suggest bolder animals approach risky or novel situations sooner and are less affected by non-lethal scare devices than wary individuals. We also present research that aims to test whether coyotes exposed to stimuli designed to simulate an urban environment (innocuous human and pet encounters) acquire bolder or more aggressive behavior through repeated exposure to such encounters. We believe captive coyote research provides a unique opportunity to improve understanding of how coyotes respond to urbanization and management tools. Results from such studies will advance management efforts to selectively identify and target problem individuals and reduce human-coyote conflicts in urban areas.

Home Range, Activity Patterns, and Habitat Selection of the Southeastern Coyote (*Canis latrans*) Along an Urban-Rural Gradient

Holly Jantz, Auburn University, School of Forestry and Wildlife Sciences, 602 Duncan Dr., Auburn, AL 36804

James Armstrong, Auburn University, School of Forestry and Wildlife Sciences, 602 Duncan Dr., Auburn, AL 36804

Wendy Arjo, AGEISS Inc., 1401 Marvin Rd NE, Suite 307 #422, Lacey, WA 98516

Throughout the past several decades, coyotes (*Canis latrans*) have become common inhabitants of urban areas in the Southeastern United States. Because their southward expansion is recent, there is a lack of information on urban coyote move-

ments in this part of the country. We examined seasonal coyote home range size, activity patterns, and habitat selection along an urban-rural gradient in east-central Alabama from 2007 to 2009. Urban association in individual home ranges varied 2% to 45%. Linear models suggest composite and seasonal home range size decreased as urbanization increased during all seasons. Mixed logistic regression models indicate that coyotes across the gradient were active at similar times during all seasons, except for diurnal hours in pup-rearing season, when coyotes were less active with increasing urbanization. Both urban and rural coyotes avoid areas of high, medium, and low intensity urbanization, but differ in other habitat preferences. The information from this study will allow biologists and resource managers to gain an understanding of coyote movement in southeastern urban areas, and will be helpful in predicting and mitigating potential human-coyote interactions in the southeast.

Mange and Conflict Behavior in Urban Coyotes

Maureen Murray, University of Alberta, | 1455 Saskatchewan Dr., Edmonton, AB T6E 2E9

Colleen Cassady St. Clair, University of Alberta, | 1455 Saskatchewan Dr., Edmonton, AB T6E 2E9

The coyote (*Canis latrans*) is the only top predator to successfully adapt to urban areas, resulting in high rates of human-coyote conflict in cities across North America. While many studies have described the habitat use and diet of coyotes in cities, none so far have examined what mechanisms cause individual coyotes to exhibit conflict-prone behavior. We aim to determine whether coyotes infested with Sarcoptic mange (*Sarcoptes scabiei*, a mite that causes fur loss and loss of motor function) exhibit more reliance on human-dominated habitat than non-infested coyotes. We GPS-collared 11 urban coyotes (six with mange, five without) in Edmonton, Alberta using 3-hour fix rates. For each individual coyote we constructed coarse- and fine-scale resource selection functions to determine selection for land-use type and microhabitat features. We also analyzed hair and scat samples to correlate health, habitat selection and diet. Coyotes with mange tended to select for residential areas and the presence of food garbage and exhibited diurnal activity while coyotes without mange tended to select for natural areas, against human infrastructure and were nocturnal. These preliminary results indicate that reducing the spread of Sarcoptic mange might have an important role in reducing human-coyote conflict and the need for lethal management. Reducing disease transmission may be accomplished by securing large anthropogenic food sources such as compost piles that may promote mange transmission due to high coyote densities.

Trapping and Managing Urban Coyotes: Practical Advice for Natural Resource Professionals and Urban Managers

David L. Bergman, USDA/APHIS/Wildlife Services, 8836 N 23 Avenue, Suite 2, Phoenix, AZ 85021

Michael J. Bodenchuk, USDA/APHIS/Wildlife Services, San Antonio, TX

Stewart W. Breck, USDA/APHIS/WS/National Wildlife Research Center, Fort Collins, CO

The development of management techniques and tools to address coyote damage can be traced back through more than a century of practice and use in livestock protection and the fur trapping industry. Not all the tools developed for livestock protection or for fur trapping can be used in urban environments. The urban coyote damage manager in today's world requires a multitude of tools and techniques that can be successfully used under an integrated coyote damage management program. Methods include nonlethal management from harassment to trapping, education, legislation and lethal management. This presentation will provide a review of practical methods for coyote management in urban environments. In addition, we will review the recent advances in nonlethal management and the use of legislation and education to manage urban coyotes.

An Overview of Human-Coyote Interactions in New York: Implications for Large-Scale Monitoring of Conflicts

Daniel A. Bogan, Department of Natural Resources, Cornell University, Ithaca, NY 14853

Paul D. Curtis, Department of Natural Resources, Cornell University, Ithaca, NY 14853

Urban landscapes are the focus of much concern regarding human-coyote interactions. The relatively recent co-occurrence of urban-dwelling coyotes and urban sprawl may increase the potential for a subset of negative interactions and conflicts. A recent human dimensions survey found many urban residents are concerned about general coyote sightings in natural habitats in urban lands, and the proportion of concerned stakeholders increases with proximity to residential areas. The novelty of human-coyote interactions may spur some residents to report the events to local authorities and state wildlife management agencies. We conducted a multi-modal study of coyote ecology motivated by New York State Department of Environmental Conservation staff concerns for apparent increases in reported human-coyote conflicts.

We examined a statewide dataset of unsolicited reports of coyote interactions with people and pets for spatial and temporal patterns, and compared results with a web-based reporting form. Despite moderate reports of human-coyote interactions, our concurrent urban field study of coyote space use and diet found no evidence of chronic problems, and limited support for ephemeral coyote conflicts. We provide an overview of these recent studies, and highlight concerns associated with monitoring future coyote conflicts based on unsolicited stakeholder reports. Informed by our findings of reported human-coyote interactions, we simulated generalized interactions across NYS based on 3 spatial-point processes. We examine and discuss the resulting patterns in terms of expectations for a large-scale monitoring program, and discuss the utility of monitoring these reports for significant trends. We caution that monitoring unsolicited reports of interactions are likely an unreliable source of information for documenting changing coyote behaviors. However, the reports may help frame the type of situations that spurred stakeholders to report their interactions, and provide some guidance for management interventions.

Coyote Education and Outreach in Urban Environments: Managing Coyote Conflict Equals Managing People

Mary Ann Bonnell, Aurora Open Space and Natural Resources Division, 15151 E Alameda Pkwy #4600, Aurora, CO 80012

Reducing coyote conflict is a question of behavior: both coyote and human. Coyote conflict can be reduced in communities that possess not only a basic understanding of coyote behavior but also an understanding of how human actions can affect the behavior of local coyotes. Public education and outreach related to coyote awareness and safety in an urban setting requires both proactive and reactive strategies that are targeted at very different market segments including public officials, community leaders, media professionals, coworkers, adjacent resource managers, students, families, coyote haters and coyote huggers. This presentation will provide specific examples of a full-court press approach to coyote management, education and outreach in the City of Aurora, CO.

Spatial and Temporal Patterns of Coyote Conflicts in the Denver Metropolitan Area

Sharon A Poessel, Department of Wildland Resources, Utah State University, Logan, UT 84322

Stewart W. Breck, USDA-WS-National Wildlife Research Center, Fort Collins, CO 80521

Kevin R. Crooks, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, CO 80523

Coyotes (*Canis latrans*) are generalist carnivores that can thrive in urbanized areas, and interactions between humans and coyotes in urban environments are becoming more common. However, very little research has described temporal and spatial patterns of interactions and conflict between humans and coyotes. We used sighting, encounter, and conflict data from 22 entities within the Denver Metropolitan Area (DMA) in Colorado to: 1) define, quantify, and map the types of coyote conflict; and 2) correlate coyote conflicts to landscape features and housing density. Of the 4,006 total coyote reports, we identified 78 observations (1.9%), 3,023 sightings (75.5%), 395 encounters (9.9%), 26 incidents (0.6%), 471 pet-attacks (11.8%), and 13 human-attacks (0.3%). Sightings, encounters, and conflicts all increased dramatically in 2009 for unknown reasons. Average monthly coyote reports during the winter months (December – March) were more than twice the average number of reports during the remaining months. Hotspots of coyote reports were apparent in the southern and western DMA, possibly because coyotes had better access to development, and hence interaction with residents, via natural areas bordering urban areas. Coyotes were observed more than expected in developed regions, including urban and suburban areas; however, residents are more likely to encounter, and thus report, coyotes in these areas. Our results will help direct future research on coyote ecology and human dimensions, improve methods for reporting and recording conflict, and focus management efforts in the DMA and other urban areas.

SESSION G: Case Studies in Wildlife Ecology

Moderator: Chuck Kowaleski, Texas Parks and Wildlife Department

Seasonal Value of Urban Important Bird Area Habitat to Migrating and Breeding Landbirds

Tania Z Homayoun, Conservation Biology Graduate Program, 200 Hodson Hall, University of Minnesota, Saint Paul, MN 55108

Robert B. Blair, Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota, Saint Paul, MN 55108

Increasing urban development across North America threatens not only breeding habitat for migrating landbirds but also the stopover habitat they require to rest and refuel. The Mississippi River Twin Cities Important Bird Area (IBA) includes a mosaic of residential, commercial, and park-reserve land along the Mississippi River between Minneapolis and Hastings, Minnesota. The purpose of this study was to investigate relationships between land cover surrounding urban parks in the Mississippi River Twin Cities IBA and the composition of landbird communities present in the IBA during spring migration and summer breeding seasons and to evaluate this habitat's value to landbirds during both seasons. Using point-count data collected by citizen scientists at 8 park-reserve sites in the IBA between 2007 and 2010, we calculated species richness, diversity, and evenness for migrating and breeding landbird communities at each site and grouped species into three conservation classes and four migration classes. We used several approaches—including an information theoretic approach to rank multiple regression models—to evaluate how these community measures vary across sites with land cover and between seasons. We found that most community measures responded negatively to increased impervious cover, and that the response was stronger during breeding season than during migration. Patterns of landbird richness and density suggest that even lower-quality bird habitat within the IBA may serve migrating birds and that management of land targeting breeding birds should aggressively mitigate the impacts of surrounding urban development within 250m of IBA sites, especially around the least urban sites.

Evidence Based Avian Conservation in Dutch Cities

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The fact that four urban exploiters became Red Listed in the Netherlands in 2004, drew attention to the fact that cities were rapidly degrading as bird habitat. This was the reason to start a conservation program on urban birds. Through a point count scheme, based on the Dutch postal code system, data are being collected. Citizens can easily join the program by counting their own postal code area. The program delivered data to develop: a Benchmark for urban birds and a State of the urban birds in 2009. The latter compares the trend of 40 species in urban and rural areas. The differences are surprisingly great. The benchmark for urban birds shows the relative species richness of a location. For both the benchmark and the state of the urban birds, the bird species are lumped in 'guilds' not based on biological family but on landscape use. Therefore giving a direct implication of the conservation measurements needed in a certain location e.g. city. The benchmark goes together with a handbook on the conservation of urban birds. It can be used by municipalities and citizens as well as the building industry, the most challenging of all stakeholders. To make the book easy-to-use for the building industry a checklist was developed in cooperation with the biggest contractor in the country. This is quiet a revolutionary cooperation. The checklist consist of simple yes or no questions that lead to an advice of what conservations measurements that can be taken on a building site.

Urban Bat Management and Conservation

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Bats may be the most highly beneficial yet most misunderstood groups of native wildlife in North America. They are not only vital to our ecosystems, they are valuable to our economy. Recent research revealed that free-tailed bats in south-central Texas may save farmers up to \$1.7 million a year due to their consumption of significant agricultural pests. But bats are declining rapidly. In the NE, WNS is wiping out entire colonies of formerly 'common' bats, resulting in population declines of 50% – 90% at some locations. We should be protecting urban bats. Bats in buildings are vulnerable; they

should be viewed as beneficial wildlife not pests. Current methods of 'controlling' them will not solve problems – real or perceived – caused when bats roost in buildings. Education is the first step (if we know the facts, we can prevent problems), followed by patience and a proactive urban bat management plan that is focused on long-term population management including roost mitigation, safe, permanent exclusion methods and public education. The results are Win–Win.

Increased Urbanization Could Provide Opportunity for Increased Aquatic Exotic Releases: Impacts to Industry and Pro-Active Measures Taken at a State and National Level

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Each year billions of dollars are spent by a diverse number of industries to mitigate the damages caused by aquatic invasive species. For example, zebra mussels were estimated to have cost the North American power industry 3.1 billion dollars from 1993 to 1999. Typically, the releases of these aquatic invaders are the result of anthropogenic activity. Boaters, anglers and aquatic hobbyists serve as vectors for these introductions. With increased popularity in home aquariums and water gardens and growing communities bringing more boating traffic to our state water ways, it is crucial that the issue of invasive exotics be addressed by a wide variety of disciplines at both a state and federal level. Education and awareness campaigns such as Habitattitude have been developed at a national level to educate the public and pet industry about why exotics should not be released. In Texas, proactive efforts are underway to curb future impacts from exotic plant releases with the development of an approved aquatic plant White List and aquatic hitchhiker awareness campaigns. During this presentation I will highlight some of the costly impacts of aquatic invasive species, relate challenges presented in regulating exotic species in an urban setting, and discuss education, regulation, and enforcement efforts at a national and state level.

Reducing the Risk of Biological Invasion by Creating Incentives for Pet Sellers and Owners to Do the Right Thing

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Invasive species are a major threat to biodiversity and economic interests, with many introductions resulting from actions of people involved in pet and ornamental plant businesses. Invasive species eventually end up in the care of the general public, with most costs born by society rather than businesses or owners: a classic economic externality. Standard economic instruments used to address externalities require considerable extension in this case. Simple taxation can reduce the volume of trade, but taxes do little to discipline the riskiest market actors. We provide an outline for a mechanism addressing invasive species issues, focusing primarily on the local level. We propose to collect funds from the trade and apply them specifically to support: 1) a national resource center offering information and training; 2) programs to professionalize local education and response teams, focusing on pet store owners, hobbyist organizations, and first responders; 3) an incentive program to encourage pet stores to take back unwanted animals; 4) a tracking system for identifying and penalizing owners of newly released animals; and 5) a rapid response system to address newly reported invasives. The level of taxation could decrease as problems diminish.

Assessing the Impact of Human Development on High Priority Forest Birds at a Regional Scale

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Wildlife conservation requires information on how expanding human development is likely to impact populations and habitats. We combined bird abundance information (circa 2000) and concurrent and projected (2030) levels of housing

density (HD) to examine potential impacts to bird populations in the central and south-central U.S. We used Breeding Bird Survey, HD, and land cover data to model abundance for 34 priority species. The best predictive model included HD for 26 species (76%) and top models for 7 species included land use changes associated with increasing HD. Next we developed models predicting developed area from HD and land cover to project future (2030) landscapes. Finally, we applied our abundance models to the projected landscapes. We predicted overall declines for 30 species, but declines were not ubiquitous. Rather, species-specific changes resulted from spatial variability in human population and land use. Our spatially-explicit predictions can help land planners mitigate future impacts of development. Because this work is based on national datasets, similar products can be developed for other U.S. regions.

Zombie Turtles Living in Our Cities

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Turtle populations are typically very sensitive to adult mortality and nests are heavily predated by human-subsidized predators, yet turtles persist in the wetlands of many urban greenspaces. This is largely because of red-eared sliders and snapping turtles. Sliders have been released outside their native range and snappers persist even in highly disturbed habitats. Turtle populations may persist even without successful recruitment because turtles are long-lived; these populations are the “walking dead”. They can persist even longer without successful reproduction with occasional releases. Diamondback terrapins occur along the U.S. Atlantic and have been affected by marsh conversion and market hunting. I have been conducting a mark-recapture study of terrapins in Jamaica Bay, New York City, since 1998 and have marked over 600 adults. Hatching success of eggs under good field conditions is >80%. Raccoons predate 95-98% of nests; hatchlings are predated by raccoons and Norway rats. The number of nesting females in the population has remained fairly constant at about 965 adults. However, the number of nests has been dropping steadily and is now 37% lower than in 1999. It appears that the number of nests/females is decreasing, which has not been documented in any other turtle population. This may be a response to decreasing resources, due to the rapid erosion of JB salt marshes. It appears that anthropogenic factors influence recruitment in this urban population both indirectly, through declining resources, and directly, through subsidized predation, natural predators, and nest failure.

Habitat Selection of an American Alligator (*Alligator mississippiensis*) Population at the Edge of Their Distribution Range

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American alligator (*Alligator mississippiensis*) populations were listed as endangered in 1967. Since that time, conservation efforts have increased alligator populations across their range leading to their removal from the Endangered Species List in 1987. Delisting has resulted in the resumption of legal harvest in most states, including Texas. While American alligators have been well studied in coastal ecosystems, there is little information on the demography, population size, and habitat use of inland alligator populations. Without such data, state and federal agencies must base management decisions on data collected on coastal populations. Recent studies conducted in east Texas suggest that inland populations differ from coastal populations in individual growth rates, body condition, demographic rates, and habitat use. Furthermore, data are particularly lacking for populations at the edge of the distribution range of the species. Therefore, to develop sustainable harvest objectives and sound management strategies for these populations, data are needed on the population size, age structure, and age specific habitat use of inland alligator populations, particularly those at the edge of the distribution range. The objective of this study is to assess diel habitat selection patterns for an alligator population the edge of their distribution range at the Fort Worth Nature Center and Refuge, Texas. Preliminary data collected in 2010 are presented.

SESSION H: Nontraditional Wildlife Habitat Sources

Moderator: Keith Crenshaw, Texas Parks and Wildlife Department

Marginal Nature: Urban Wasteland and Hybrid Ecosystems

Kevin M. Anderson, Austin Water Utility Center for Environmental Research, 2210 South F.M. 973, Austin, TX 78725

Urban margins and wastelands like vacant lots, sewage ponds, alleyways and railway verges, derelict brownfields, and overgrown waterways are unique kinds of urban habitat which flourish through human neglect and in spite of seemingly adverse conditions. A diverse community of urban wildlife then claims this habitat and makes its home among the garbage and the flowers. What emerges in this wasteland is a hybrid ecosystem both weedy and wild – the unintended product of human neglect and Nature’s unflagging opportunism, which I call marginal nature. Although we think of these kinds of places as idle, degraded urban space, this unplanned waste space is transformed by nonhuman agents into the green background of the city and is far more ubiquitous in the urban landscape than planned, managed urban nature in “open space” or “green space.” For the most part, the organisms which gather in wasteland are a cosmopolitan community of species well adapted to these disturbed habitats, but this disturbance and the perceived degradation of this community by non-native species limits the appeal of marginal nature to the environmental professionals, planners, and officials who set policy on urban nature conservation. Thus, these hybrid ecosystems are usually targeted for removal and replacement with officially sanctioned native species. Contemporary approaches to urban ecology in America fail to engage the resistance of nonhuman agency in the hybrid environment of urban wastelands. I will discuss the questions raised by marginal nature in the context of my long-term study of Austin’s largest urban wasteland, Hornsby Bend.

Environmental Planning and Your Golf Course

Bob Cook, Walden on Lake Houston Golf Club; Walden on Lake Houston Golf Course Superintendent, 18100 Walden Forest Drive, Humble, TX 77346

Golf courses have been a continued source of recreation and outdoor enjoyment for many people. The Audubon Cooperative Sanctuary Program for Golf Course Superintendents was created to give a format to aid superintendents in the implementation, tracking, and fulfillment of their golf course needs while employing environmentally conscious fundamentals. This project is the collection of years of implementation on various golf courses and the struggles that superintendents have underwent. This was created with the goal of protecting as much of the native vegetation in out of play areas with the positive effect of providing wildlife habitat. The result is a project that serves as a local model for development that minimizes the impact to wildlife habitat by preserving native vegetation. I present lessons learned from our interdisciplinary cooperative endeavors, outreach materials created as a result of this project. This process helped with sustainable communities, and facilitated natural ecological processes including improved water quality and increased quantity of both surface and groundwater.

Creating a Safer Environment for Wildlife and Humans: Diligent Planning and Wildlife Management in and Around Airports

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Wildlife populations in and around airports can pose a serious threat to human safety and can cause substantial damage to aircraft. In recent decades, the increase in air traffic and populations of many wildlife species commonly involved in strikes augments the risk of wildlife strikes with aircraft. In order to reduce the potential of strikes, the Federal Aviation Administration (FAA) issued Advisory Circular (AC) 150/5200-33B, which provides guidance to public-use airports about certain land uses that potentially attract hazardous wildlife. In 2009, the FAA mandated all commercial service airports (i.e., Part 139) to conduct a Wildlife Hazard Assessment (WHA) and currently, the FAA is developing a program to perform WHAs at general aviation airports. A WHA is conducted to adequately assess the threat of wildlife hazards in and around airports. It incorporates a survey of wildlife presence and activity at an airport for 12 consecutive months and details documentation of wildlife hazards observed at the airport and within the vicinity. The FAA reviews the WHA report to determine the need for a Wildlife Hazard Management Plan (WHMP), which is a guidance document implemented by the airport to manage wildlife hazards at an airport. As a key component for wildlife management at airports, a Wildlife Hazard Working Group should be established for the communication, cooperation, and coordination among the airport personnel, private entities or individuals, and local, state, and federal agencies. Furthermore, calculated planning and wildlife management can create a safer environment for humans and wildlife.

Encouraging Wildlife on Golf Courses

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Keith Crenshaw, Texas Parks and Wildlife Department, 14320 Garrett Road, Houston, TX 77044

The Audubon International Sanctuary Program has helped improve the environmental impacts of golf courses with improved water quality, less fertilizer application, with the benefits of set aside land for wildlife corridors and habitat. Over the past three years, the City of Houston USGAA has established sanctuary programs for already built golf courses to enroll in the program. The result has been a reduction in fertilizer loads, improved water quality, reduction in maintenance costs, with the offset of an increase in wildlife habitat with the conversion of out of play areas into corridors for wildlife. I will present lessons learned from our interdisciplinary cooperative endeavors, involvement from golf course superintendents, increased constituent participation, examples of outreach materials created, and an increase in the wildlife observed throughout the golf courses in the Houston, Texas area.

The Greater Atlanta Pollinator Partnership: A Model for Urban Pollinator Conservation

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Global pollinator populations are in decline for a variety of reasons including habitat loss and pesticide use. The goals of the Greater Atlanta Pollinator Partnership (GAPP) are to develop pollinator habitat at a landscape scale that is ecologically significant, provide formal and informal educational opportunities related to pollinator conservation, and to engage citizens in this partnership. The GAPP encompasses more than 500,000 ha within a 40 km radius of downtown Atlanta, Georgia. This area includes all major public lands in metropolitan Atlanta including the Chattahoochee River National Recreation Area, Kennesaw Mountain National Battlefield Park, Martin Luther King, Jr. Historic Site, state, county and city parks, schoolyards, houses of worship, golf courses, nature centers, and thousands of individual residences. Pollinator-friendly habitat is being developed within this area. Key concepts for the GAPP include using native species when available, rescuing plants from construction sites, controlling invasive species, community gardens, and education. Developing schoolyard habitats is a priority so pollinator gardens can function as outdoor classrooms. There will also be an emphasis on registering individual home owners using an on-line registration process. All garden locations will be plotted on an on-line map so project progress can be monitored. Funding for this project is limited so synergy through partnerships is key to success.

Demographics of an Urban Water Snake Population: Mark-Recapture of *Nerodia erythrogaster* on the University of Texas at Austin Campus

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We examine habitat use and population structure of blotched water snakes, *Nerodia erythrogaster*, in an extremely urbanized setting—a small, perennial creek that flows through the University of Texas at Austin campus. This population of *N. erythrogaster* is particularly interesting because it occupies a heavily urbanized environment with available habitat often <10 m wide. Not only is this snake population located on a large university campus (~50,000 students), but these snakes live in a watershed that drains a large portion of north Austin, potentially making these snakes more vulnerable to local stochastic changes (e.g., floods). To study the population structure of *N. erythrogaster*, we have used a mark-recapture survey protocol with PIT tags to mark every snake found along an 800 m length of creek as it runs through campus. Our survey personnel include undergraduate and graduate students, as well as interested volunteers from the public. Since we began our project in July 2006, we made 23 survey trips, marking a total of 77 individuals. We recaptured 23 of these marked snakes a total of 40 times, providing some remarkable data on growth as well as movement, and we conservatively estimate there may be another 20 sub-adult or adult snakes yet unmarked in this stretch of the creek. We recently initiated a radio-telemetry component of this project, thus further providing unique educational opportunities for our diverse undergraduate student body.

Greening Corporate Mindscapes: A New Model for Greening Corporate and Institutional Landscapes

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A critical component of improving wildlife habitat within the urban matrix is addressing the often substantial acreage controlled by corporations and institutions. Large corporate/institutional campuses often serve as “poster children” for the energy-intensive, chemically-dependent, sterile urban landscape that provides little if any benefit in terms of ecosystem services or wildlife habitat. A new approach to working with corporate constituents taken by Virginia wildlife biologists may serve as a model for more lasting and effective incremental change. Going beyond the traditional role of serving as a consultant for a potential corporate green landscaping project, Virginia biologists have begun to serve as mentors to employees and students, who then assume leadership positions in greening their respective campuses. Following basic training, employees and their supervisors, and students and their teachers become key players in inventorying current campus assets and needs, then designing and installing native plant landscapes and other habitat enhancements. Special attention will be given to the work being done at Capital One, where Green Team employees at one campus have not only helped in landscaping projects, but are now engaged in long-term monitoring of wildlife species found on their 118-acre corporate site. These employees are now serving as mentors to colleagues at a second Capital One campus seeking to replicate their success.

Developing Partnerships and Certifying Habitat Programs on Corporate Lands

Sumita Prasad, Wildlife Habitat Council, 1001 Fannin, Suite 4000, Houston, TX 77002

Since 1990, Wildlife Habitat Council (WHC) has certified over 600 of programs at corporate facilities around the world providing third-party credibility and an objective evaluation of habitat and conservation education projects through our *Corporate Wildlife Habitat Certification/International Accreditation Program*SM. Wildlife habitat projects on these private lands, which vary in nature and scope, are corporate-driven collaborative efforts between management, employees, community members, conservation groups, and resource agencies. Creating habitat patches in urban areas on corporate lands and connecting these patches to create wildlife corridors can reduce the effects of habitat fragmentation across the landscape. Site-specific programs are developed within the context of regional conservation issues to benefit native species, foster an adaptive ecosystem approach to land management, and promote education and outreach opportunities. By creating volunteer-based wildlife teams of company employees and community groups, WHC programs in urban environments achieve a high level of success. Stakeholder involvement from school groups, Girl Scouts and Boy Scouts, civic organizations, and nonprofit organizations drive sustainability of land restoration activities in urban settings. WHC also works to broaden understanding of wildlife values through the incorporation of conservation education, volunteer participation, and community outreach programs. WHC-certified programs demonstrate a long-term commitment to managing quality habitat for wildlife and a commitment to education and outreach initiatives.

TUESDAY AFTERNOON, MAY 24, 2011

SESSION I: Urban Carnivores

Moderator: Seth P.D. Riley, Ph.D., National Park Service

Urban Stone Martens (*Martes foina*) in Europe: Ecology and Conflicts

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In Europe the stone marten (*Martes foina*) is the most common wild carnivore to inhabit urbanized environments. It can be found anywhere from small rural villages to large European capitals. While human-marten conflicts are relatively well known, the underlying ecology, however, remained poorly studied. Stone martens do exhibit nuisance behavior by denning in attics of inhabited buildings and by climbing into vehicle engine compartments where they cause various types of damage (“car-marten phenomenon”). Over a two-year period 13 stone martens were intensively radio-tracked in two

towns in Luxembourg. Nocturnal tracking resulted in over 9700 telemetry fixes, which allowed studying their socio-spatial organization and habitat use, as well as their use of parked vehicles. The stone martens made almost exclusively use of urban habitat and exhibited a strong intrasexual territoriality. With mean territory sizes of 37 ha (females) and 112 ha (males), densities remained relatively low (4-6 adults km⁻²). Patterns of road and vehicle use suggest that the car-marten phenomenon is linked to territorial behavior in spring. Diurnal localizations inside the martens' dens resulted in over 2300 fixes and provided a good understanding of their den use patterns. With 42% of all daytime denning events occurring under roofs of inhabited buildings, potential for human-marten conflict is relatively high.

Novel Mortality Sources in an Urban Population of Endangered San Joaquin Kit Foxes in Bakersfield, California

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San Joaquin kit foxes (*Vulpes macrotis mutica*) are listed as Federal Endangered and California Threatened, primarily due to profound habitat loss and fragmentation. Interestingly, a population of kit foxes occurs in the city of Bakersfield, CA. The most common mortality source is vehicle strike. However, this population is also subjected to novel hazards not usually present in non-urban habitats. Some examples are entanglement in sports netting, such as soccer and baseball batting cage nets, antifreeze consumption, secondary toxicity to rodenticide poisons, entombment in dens, plastic fragments in the stomach, and drowning in a fountain. It is unclear at this point how or if these novel mortality sources are affecting population size, but in many cases, these mortality sources can be mitigated or avoided altogether. Athletic nets, for example, can simply be taken down at the end of the day or the bottoms of the nets can be raised to avoid entanglement by kit foxes. Public education on the proper use and cleanup of household rodenticides, ground squirrel poisons, and vehicle antifreeze may minimize exposure of these toxins to kit foxes. Conservation of this population is important and could contribute to reestablishing or bolstering non-urban kit fox populations.

Movement Patterns and Survival of Feral Domestic Cats in Urban Parks

Stanley D. Gehrt, Justin L. Brown, and Elizabeth Braaten, Max McGraw Wildlife Foundation, Dundee, IL 60118

To better guide feral cat policies in urban areas, we determined movement patterns and survival of free-ranging, domestic cats in and around urban parks in the Chicago area. During 2008-09, we captured 38 free-ranging cats and radio-collared 34. There was a trend for adult males to weigh heavier than adult females, and for altered individuals to be heavier than natural cats for both sexes. Home range sizes varied widely among individuals, with estimates ranging from 3 to 270 ha. There were no consistent differences in home range size between altered and unaltered cats, or between males and females. Home range sizes probably varied due to individual variation in responses to human resources. The annual survival estimate combined across categories was 0.812 (SE = 0.0976), or 81%, which was relatively high compared to native mesocarnivores despite high numbers of coyotes. However, our survival estimates are undoubtedly affected by human activities.

Ecological and Behavioral Adaptations for Survival in Urban Fisher

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Roland Kays, New York State Museum, 3140 CEC, Albany, NY 12230

Fisher (*Martes pennanti*) have traditionally been considered a wilderness species. While their populations in western North America are classified as rare and endangered, their populations in the Northeast United States are robust, and recently have started colonizing urban and suburban forests in New England and New York State. We are using remote cameras and tracking collars to study the ecological and behavioral adaptations that have allowed fisher to live in these human dominated landscapes around Albany, NY. Preliminary results suggest that urban fisher have an abrupt nocturnal activity pattern compared to wild fisher, which are more active during daylight hours. All fisher show a strong preference for forested habitat, avoiding developed areas and open fields, and must move between multiple urban forest fragments

to find sufficient habitat. Our high-resolution (>2 minutes) GPS location data allows us to identify functional movement corridors and to pinpoint the locations where animals cross roads. Field-investigation of these road crossing sites reveals a high use of drainage culverts and under-road tunnels. Tri-axial accelerometer data help us distinguish rest sites from predation sites, which we then investigate in the field to describe. Our study will provide valuable information on how a threatened species can adapt to encroaching human development over the scale of just a few decades, helping us help other species that are threatened by similar forces.

Urban Black Bear Ecology: Fluctuating Synanthropy and Its Implications for Management

Stewart W. Breck, USDA-WIS-National Wildlife Research Center

S. Baruch-Mordo and K. Wilson, Department of Fishery and Wildlife Biology, Colorado State University

J. Broderick, Colorado Division of Wildlife

Urbanization continues to be a major force shaping our world. It correspondingly drives the need to examine the synanthropy of wildlife, particularly their dependency on anthropogenic resources and the subsequent changes in space-use, diel activity, and population dynamics. A common assumption is that some species are either synanthropic or not, where the degree of synanthropy and its seasonal and annual variation are rarely considered. Understanding such patterns is especially important to better manage urban wildlife and resolve human-wildlife conflicts. Using GPS data collected from 2005-2009 on black bears (*Ursus americanus*) in Aspen, Colorado, USA, we examined current hypotheses about bear synanthropy suggesting that bears will have smaller home ranges and shift to nocturnal activity to utilize human food sources, and that habituation of bears leads to irreversible synanthropy. We examine these hypotheses using activity and location data collected at 5- and 30-min intervals, respectively. We modeled bears' home range of and diel activity patterns as a function of individual covariates (e.g., gender, age, reproductive status) and environmental covariates (e.g., season, quality of natural food production, human development). Bears incorporated more developed areas in their home ranges and became more nocturnal in years of natural food production failure, but returned to "wildlands" and "normal" activity patterns in subsequent good natural food production years. The variability in the degree of synanthropy indicated behavioral plasticity by bears and did not support assumptions of full synanthropy (i.e., irreversible habituation). We discuss implications for conflict management and to the bear population, especially in years of natural food failures, when there is potential for similar cities to serve as population sinks.

The Carrot or the Stick? Evaluation of Education and Enforcement as Management Tools for Urban Human-Bear Conflicts

Stewart W. Breck, USDA-WIS-National Wildlife Research Center

S. Baruch-Mordo and K. Wilson, Department of Fishery and Wildlife Biology, Colorado State University

J. Broderick, Colorado Division of Wildlife

Human-wildlife conflicts have increased worldwide with the increase in human development into wildlife habitats. Traditional management tools targeting wildlife are often ineffective, short-term solutions, and there is a growing recognition among wildlife managers that longer-term solutions should include altering human behaviors. Public education and enforcement of wildlife-related laws are two primary methods implemented to change human behaviors, but little research has been conducted to evaluate the success of these tools for conflict management. In this study we experimentally tested three education and enforcement tools to determine their effectiveness at altering human behavior and reducing the availability of anthropogenic attractants to black bears (*Ursus americanus*) in Aspen, Colorado, USA. Specifically, we evaluated on-site education using information at dumpsters, neighborhood-wide Bear Aware educational campaign, and elevated enforcement at two levels (daily patrolling with or without written notices for violations) in reducing the availability of garbage to bears. Responses, i.e., changes in human behavior, included the following direct measures: violations of local wildlife ordinances, garbage availability, and change to a bear-resistance refuse container. We found little support for education, as implemented, or enforcement in the form of daily patrolling in changing human behavior, but found more support for proactive enforcement, i.e., dispensing warning notices. More broadly, we demonstrated the value of gathering evidence before and after implementing management actions, and the dangers of measuring responses using human-bear conflicts in the absence of ecological knowledge. We recommend development of more effective educational methods, application of proactive enforcement, and continued evaluation of tools by directly measuring change in human behavior. We provide empirical evidence adding to the conservation managers' toolbox, informing policy makers, and promoting solutions to human-bear conflicts.

SESSION J: Planning Tools for Protecting Water Sources and Urban Green Spaces

Moderator: Karen Clary, Ph.D., Texas Parks and Wildlife Department

Changing The Landscape: Leveraging Water Conservation Programs to Support Urban Wildlife

Rick Soehren, California Department of Water Resources (Retired), 1421 Birchwood Lane, Sacramento, CA 95822

Communities across the United States, and particularly in the arid West, are responding to water shortages by conserving water. One of the most effective ways for cities and towns to conserve water is to make changes in urban landscapes. For example, cities in California are working to meet a statewide goal of reducing per-capita water use 20% by 2020, and at least one-third of the water savings is expected to come from landscape water conservation. Many water agencies that encourage landscape water conservation have no expertise in wildlife management, so landscape elements that support wildlife may not be emphasized when new landscapes are designed or old ones are renovated to conserve water. From a water conservation perspective, there is little difference between artificial turf and native plants. Wildlife managers have opportunities to influence positive landscape changes with relatively little effort by sharing expertise and information with water agencies. Simple steps for wildlife managers include: learn about current or proposed landscape water conservation programs, develop relationships with water agency personnel, share information about wildlife needs and existing sources of information, and offer to serve as a continuing resource for outreach and education. Modest steps taken by wildlife managers can result in significant improvements in the wildlife value of urban landscapes as these landscapes are modified to conserve water.

Productive Landscapes: An Innovative Approach to Managing Development, Stormwater and Agriculture in an Urban Environment

Laurie Brown, Patti Banks Associates, 929 Walnut St., Ste. 200, Kansas City, MO 64106

Green infrastructure has been defined as a planned, managed and interconnected network of natural areas, the benefits of which include cost effective improvement of air and water quality, stabilization of streams, reduction of flood risks, protection of wildlife habitat, and ultimately the formation of a framework around which more sustainable urban development patterns can occur. Green infrastructure is taking on a whole new meaning in Kansas City, Missouri. In recent years, more people have become interested in purchasing and preparing their food from local and regional sources. As a result many residents, organizations, and businesses within the Kansas City metropolitan area have re-envisioned and re-purposed both private and public spaces as landscapes to grow food for local consumption. In 2008, DST Systems Inc. made the decision to take a valuable piece of developable land in the City's Crossroads District and make it into a living, growing environmental experiment. The 18Broadway project began as an opportunity to create demonstration rain gardens and blossomed into a full-fledged landscape that integrates urban agriculture and stormwater management. Featuring an array of stormwater collection and usage strategies, as well as a large community garden, alternative energy applications, and "green" building approaches, 18Broadway will examine and illustrate best practices in building, growing and living in a healthy urban ecosystem.

An Urban Ecosystem Approach to Stream Setbacks in Kansas City, Missouri

Laurie Brown, Patti Banks Associates, 929 Walnut St., Ste 200, Kansas City, MO 64106

Cities are ecosystems with complex functions and processes that are controlled by climate, hydrology, soils, vegetation, and human interactions. Humans are part of ecosystems as they impact the environment and are in turn impacted by the environment surrounding them. Urban ecosystem functions are simultaneously affected and maintained by human and ecological processes. Planners must consider all of these factors if cities are to be ecologically resilient. The Kansas City, Missouri (KCMO) Stream Setback Ordinance serves as a model ordinance illustrating the integration of humans and ecological processes in an effort to achieve water quality protection. Many communities are recognizing the economic value of protecting water resources for the benefit of public infrastructure, health, and community quality of life. This ordinance provides multiple community benefits from stormwater management to recreation and wildlife habitat, while minimizing the impact to developable land. Environmental, economic, and social factors are balanced by taking an ecosystem approach to development of the setback ordinance. Through this ordinance, KCMO will be able to conserve functional riparian forest buffers, enhance and improve water quality, provide habitats for wildlife and recreational opportunities for people, and in turn enhance people's quality of life. The adoption process for this ordinance illustrates the integral components community planners and decision-makers can use in the development of buffer ordinances that meet their urban ecosystem planning goals.

Protecting the Edwards Aquifer and the Water of San Antonio Through Natural Areas and Conservation Easements

Kristyl Smith, City of San Antonio, 114 W. Commerce Street, San Antonio, TX 78215

The City of San Antonio has been protecting sensitive land located over the Edwards Aquifer since 2000. Voters approved two separate sales tax programs for the purchase of properties located over the Edwards Aquifer totaling \$135 million: \$45 million for parks and watershed protection in 2000; \$90 million for watershed protection in 2005. Before these elections, there were no significant programs designed to identify and protect sensitive land located over the aquifer. A unique selection process heavily dependent upon scientific factors created a transparent acquisition structure that includes GIS Spatial-Models, partnerships with local agencies, non-profit land trusts, independent advisory boards and landowners working together to prevent surface development on protected lands thereby protecting the quality and quantity of water entering the Edwards Aquifer. The result is a project that serves as a model for large scale preservation programs. I will present outreach materials created for the election process, conservation easement templates, sample interlocal agreements and lessons learned from our multi-agency cooperative endeavors. This project resulted in just under 97,000 acres protected through fee-simple purchases or the use of conservation easements and, based upon these successes, in 2010 the voters of San Antonio again voted to tax themselves for an additional \$90 million to protect their water supply.

Accomplishing Lasting Land Conservation: A Market Viewpoint

Carolyn Vogel and Cynthia Inman, Texas Conservation Connection, LLC, 6142 Jumano Ln, Austin, TX 78749

Land and its long-term conservation [protection] receives regular categorization as the right or responsibility of one or more of these traditional institutions: the individual, government(s) and or the not-for-profit sector. These institutions or entities may collaborate, battle or set out on their individual paths to achieve desired long-term conservation outcomes – be that municipal green belts or trails, wildlife preserves, parkland buffer zones, water catchment facilities, neighborhood open space, and more. Now enters the for-profit business sector, with its own desired outcomes, and the mixture gets stirred again as all sectors ‘circle’ to adopt, adapt or decry this added ingredient. Will this layer of business or market approaches, including profit motives and focused strategies, degrade or enhance the ability to conserve land and its productivity, use/enjoyment, and legacy?

Conservation Easements as a Tool for Land Protection Within Conservation Developments

Daniel Dietz, Texas Land Conservancy, P.O. Box 162481, Austin, TX 78716

The Texas Land Conservancy (TLC) is a land trust that uses conservation easements as a tool to protect natural areas. In its 29 year history, TLC has taken easements in numerous urban settings with varying degrees of success. In this presentation, we will examine two conservation easements that are community owned and seek to integrate natural communities and human habitation. Champions Ridge in San Antonio has been under a conservation easement since 1999. It is owned by a homeowners association (HOA) and the role of the HOA and TLC is clearly defined. While the property is not trouble free, there are mechanisms to fix any problems that may arise. Los Establos east of Dallas is an ambitious conservation development that has been under easement since 2000, but has been mired with residential infighting and poor management. While the initial goals of Los Establos were well expressed, the project suffered a lack of specificity in both the HOA rules and conservation easement, which, coupled with poor planning, have contributed to the degradation of the natural resources. TLC has learned from these experiences and is creating more specific conservation easements which allow for adaptive management. TLC has also learned that community outreach and education by the land trust will be a perpetual need and is much more time consuming with conservation developments than with traditional, one –owner, conservation easements.

SESSION K: Conservation Messaging to Diverse Stakeholders Part 2

Moderator: Clark E. Adams, Ph.D., Texas A&M University

Strengthening Education, Environment and Economy Through Wilderness and Other Public Lands

P. Stephen West, New Mexico Wilderness Alliance & Our Texas Wild, Staff Scientist, SE and Texas Director, New Mexico Wilderness Alliance(NMWA) and Our Texas Wild(OTW)!, 1105 Ocotillo Canyon Drive, Carlsbad, NM 88220

NMWA and OTW! have been working in New Mexico for over 10 years and has recently moved to Texas working on wilderness, open space, wildlife and education issues. In the struggle to protect open spaces and provide access to the outdoors, it is important to realize there are many studies that can be used to help generate public support. These tools can be especially useful in communities where there has been a historic lack of support. Studies have shown that students who have access to the outdoors as a part of their studies score better on tests, exhibit better behavior and do better in the classroom. The continued eroding of time students spend in open spaces can be corrected through a variety of community resources including local researchers, habitat gardens, and community sponsored trips. In many areas proponents of open space and wilderness run into claims that such “waste” of lands are bad for local economies. Research indicates that even in worst-case scenarios it is a wash and almost always results in strengthened economies. Open spaces/wilderness areas also serve to protect watershed, viewsheds and air resources and add to an overall quality of life. These tools can help win converts to protecting wildlife, open space and provide a better quality of life.

What Can We Learn From 55,000 Urban Wildlife Hotline Calls?

Kathy Milacek, DFW Wildlife Coalition, 504 Riney Road, Little Elm, TX 75068

The DFW Wildlife Coalition’s urban wildlife hotline is a volunteer-operated, community-supported non-profit that partners with many local Master Naturalist chapters and animal control agencies to educate the public on the urban wildlife they share their cities, and backyards, with. Since 2004, the DFW Wildlife Coalition has taken over 55,000 calls from the public about urban wildlife in the Dallas-Fort Worth Metroplex. This includes over 500 reports of bobcats, coyotes, mountain lions and alligators – recording locations and behavior levels. These reports are tracked and monitored by Texas Parks and Wildlife’s DFW urban biologists as well as local animal control agencies.

Urban ecosystems present special challenges, and opportunities, for the wildlife that can survive, and even thrive, with millions of condensed people, automobiles and domestic dogs and cats. What can be learned from 55,000 urban wildlife calls over the last seven years? What are the most common urban wildlife-human interactions? Why do most people call about urban wildlife? What are their primary concerns and questions? This presentation will present a breakdown of the types of calls, summarize the trends and review the top five urban wildlife conflict scenarios.

Where Rural and Urban Meet: “The Story Of Strawberry House”

L. Pete Heard, USDA NRCS Agricultural Wildlife Conservation Center, 7578 Old Canton Road, Madison, MS 39110

A brief story of what 52 years of professional conservationist experience leads the author to do to capitalize on the effectiveness of his unit’s mission of wildlife technology development is given. The USDA NRCS Agricultural Wildlife Conservation Center (AWCC) was established to develop and transfer fish and wildlife technology to agency field offices and partners. Working with the belief that sustainability of America’s natural resources base can only endure when a majority of Americans understand and support conservation of natural resources in a balanced way, the mission expanded to include conservation education. An example of visionary actions being taken is given. An opportunity, developing from a long-time working relationship with the small town Mayor of Madison, MS leads to a partnership agreement whereby the AWCC establishes its operation in an 1870 circa National Historical Registry building known locally as “The Strawberry House.” Exciting new ways involving the public is given, leading to over-whelming success in exposure to the conservation movement on a national level. Visitors are exposed to displays and history of early conservation problems and early conservation leaders. Modern conservation practices (interactive video) are displayed. Over 2,000 plants demonstrate the $\frac{3}{4}$ acre pollinator garden (People’s Garden). Urban wildlife habitat is displayed on the grounds. An agricultural buffer developed by the NRCS Plant Materials Center (PMC) is part of the garden and demonstrates agricultural field borders for pollinators. A discussion of public involvement is given through a power point presentation which expresses the totality of the AWCC’s dual mission of conservation education while meeting goals of technology development.

Texas Nature Trackers: A Citizen Science Monitoring Effort

Marsha E. May and Lee Ann Linam, Texas Parks and Wildlife Department, 4200 Smith School Rd, Austin, TX 78744

In 1992, Texas Parks and Wildlife developed a strategy for monitoring Species of Concern (then Candidate Species) using citizen volunteers. That strategy evolved into Texas Nature Trackers, a citizen science monitoring effort designed to involve volunteers of all ages and interest levels in gathering scientific data on species of concern in Texas through experiential learning. With the goal of enabling long-term conservation through status surveys, monitoring, and collection of habitat data, Texas Nature Tracker projects also foster appreciation and understanding of local wildlife and their habitats. Several statewide projects are offered under the umbrella of Texas Nature Trackers. Projects that specifically focus on species of concern include Texas Horned Lizard Watch, Texas Mussel Watch, Texas Amphibian Watch, the Texas Box Turtle Survey and Texas Black-tailed Prairie Dog Watch. Since 1996 over 1000 Texas citizens have participated in these TNT projects, logging over 5000 volunteer hours. Texas Nature Tracker projects are also reaching more Texas citizens through partnerships with Texas Master Naturalist Chapters, zoos, and nature centers.

Citizen Science: A Tool for Ecosystem Surveys and Public Education

Ben Eldridge, Cibolo Nature Center, 140 City Park Rd., Boerne, TX 78006

Citizen Science is a valuable surveying tool that facilitates comprehensive mapping of ecological systems. Citizen Scientists are volunteers who seek to enjoy nature and understand it better while conducting scientific surveys. The data they collect provide for GIS mapping of habitats, biodiversity and species densities, thereby informing landscape management and human decisions that impact ecology. The Cibolo Nature Center in Boerne, Texas has created and maintained an active Citizen Science Research program since 1999. To engage citizens in scientific surveys of the flora and fauna in their communities, the Cibolo Nature Center has devised protocols that ease adoption and increase the enjoyment of conducting Citizen Science. As facilitators, we provide training, coordinate research events, and store data for Citizen Scientists. Due to the efforts of Citizen Scientists, the City of Boerne and its residents have increased their ecological awareness and influenced the urban planning and management of parks and green spaces within and around the City of Boerne. Using the Citizen Science Research model created by the Cibolo Nature Center, this presentation will illustrate the value of Citizen Science in urban environmental education, planning and decision-making, as well as provide information and resources to those who want to reap the benefits of Citizen Science in their own communities.

Generating Community Support for Wildlife and Greenspace Stewardship: Lessons From Camrose, Alberta, Canada

Glen T. Hvenegaard, University of Alberta, Augustana Campus, 4901-46 Avenue, Camrose, Alberta T4V 2R3 Canada

Micahel Barr, Ducks Unlimited Canada, 5015-49 Street, Camrose, Alberta T4V 1N5 Canada

Camrose, Alberta, Canada (population 16,000) has grown economically, but has experienced environmental sustainability challenges resulting from this growth. Camrose's aspen parkland habitats (mosaic of wetlands, aspen forests, and meadows) have been largely converted to other uses, resulting in declining wildlife populations and opportunities for connecting people with nature. The Camrose Wildlife and Stewardship Society seeks to raise awareness, knowledge, and support for abundant wildlife and greenspace in ways that contribute to quality of life in the community. The Society undertakes educational, stewardship, management, and research activities, and builds on collaboration among project partners that represent several environmental, community, municipal, and educational organizations. Since 2002, when our Greenspace Proposal was endorsed, we have conducted baseline research, received sustainable funding, delivered weekly nature education events during the summer months, and increased Purple Martin (our flagship species) populations, culminating in a commitment to undertake a Municipal Greenspace Plan and recognition through the Alberta Emerald Award program for environmental leadership. Key lessons learned are the need for partnerships, public champions, local involvement, high profile projects/events, political support, and long-term commitment. Our presentation will highlight the challenges and future opportunities in generating community support for wildlife and greenspace stewardship projects.

WEDNESDAY, MAY 25, 2011

SESSION L: Close Encounters: Talking to the Public About Urban Wildlife

2-Hour Workshop: Kieran J. Lindsey, Ph.D., and Nancy L. Hawekotte

Close Encounters: Talking to the Public About Urban Wildlife

Kieran J. Lindsey, College of Natural Resources and Environment, Virginia Polytechnic Institute and State University, 315B Cheatham Hall, Blacksburg, VA 24061-0324

Nancy L. Hawekotte, Nebraska Master Naturalist, 5011 Parker Street, Omaha, NE 68104-5031

As early as 1966, environmentalist Raymond Dasmann noted that generations of humans were growing up without any connection to the land and little experience with the natural world. Conditioned to expect services for everything from garbage pick-up to domestic animal control, it should come as no surprise that many expect access to similar assistance regarding wildlife. Urban and suburban residents are generally not prepared for the realities of living in close proximity to wildlife. An urban public requires different kinds of information and services from wildlife professionals than do traditional clientele. This workshop will be a combination of lecture and activities. Topics covered will include: the importance of proactive communication and public education; common query topics and responses; resolving conflicts between humans and wildlife, as well as between humans over wildlife; skills and resources for one-on-one communication (e.g., phone hotline, help desk); using mass communications such as traditional print, radio and television media, as well as social media; and developing public and private sector partnerships.

SESSION M: Urban Carnivores Part 2

Moderator: Stanley D. Gehrt, Ph.D., Ohio State University

Survival and Dispersal of Bobcat Kittens in an Urban Environment

Joanne Moriarty and Seth P. D. Riley, National Park Service, 401 W. Hillcrest Dr. Thousand Oaks, CA 91360

Bobcats (*Lynx rufus*) are found throughout most of North America and may be important members of many ecological communities, but their existence is threatened in some areas due to increasing urban encroachment. Many studies have been conducted on adult bobcats, but reproductive behavior, and specifically kitten survival, behavior, and dispersal, is less well understood. Nothing is known about the potential effects of urban development on reproduction and kitten dispersal, even though successful reproduction and dispersal may be especially important in fragmented urban landscapes where local population size can be reduced and connectivity is important. We studied kitten survival and dispersal throughout the remaining habitat fragments of a southern California suburb. Females, fitted with collars, and kittens, implanted with intraperitoneal transmitters, were monitored through radio telemetry for survival and movements. The survival rate of young kittens was low, but it increased dramatically with age. Most kitten mortality occurred within the first 5 months, and it was largely due to predation, likely by coyotes. No kitten mortality occurred between 5 and 10 months. Kitten movement was highly correlated with developmental stage, with older kittens exhibiting more extensive movements. All kittens observed through dispersal age remained in urban areas, despite extensive movement in some cases. Understanding the way in which altered habitats affect reproduction and kitten survival in bobcats will play an integral role in the conservation of this species along the urban edge.

Towards a New Tradition of Ecological Knowledge: Contributions of Urban Residents to Research on Bobcats and Coyotes in California

Erin E. Boydston and Lisa M. Lyren, Western Ecological Research Center, U. S. Department of the Interior, U. S. Geological Survey

William Buchanan and Virginia Fifield, Mill Valley, CA

Kevin R. Crooks, Colorado State University, Department of Fish, Wildlife, and Conservation Biology

Dick Newell, Orange County Trackers, Orange County, CA

Public reports of wildlife sightings have often been considered too anecdotal, biased, and difficult to verify to be useful to research, but such reports can provide information on elusive species that would otherwise be missed, and the ubiquity of digital cameras resolves much of the problem of verification. We present three examples in which we incorporated public sightings of carnivores into studies of carnivore behavior and ecology in urban landscapes. In an urban national park in San Francisco, remotely-triggered cameras obtained coyote detections only at night, while reports of coyotes indicated daytime activity. In Marin County, we radio-tracked a male coyote before and after dispersal to a town outside of our study area. Reports from residents provided useful information about coyotes in this area prior to the arrival of the collared male and supplemented tracking data during the four years he remained resident there and beyond the life of the collar. Sightings accompanied by photos similarly supplemented tracking and provided details about movements, behavior, and reproduction of GPS-collared bobcats in Orange County and other bobcats that were distinguished by natural markings. Studying carnivores in urban settings provides particular challenges, but utilizing the human presence for research can help provide insights into the emerging relationship between people and wildlife in these landscapes.

Ecology and Conservation of Mountain Lions in an Urban Landscape in Southern California

Seth P.D. Riley and Jeffrey A. Sikich, National Park Service, Santa Monica Mountains National Recreation Area, 401 W. Hillcrest Dr., Thousand Oaks, CA 91360

Large carnivores are a challenge for land managers in urban areas because of their large space needs and potential for conflict with humans. Since 2002, we have used GPS radiotracking to study the ecology and conservation of mountain lions (*Puma concolor*) in a national park in a highly fragmented and urbanized landscape north of Los Angeles. Despite heavy human visitation and the presence of dense residential development, mountain lions overwhelmingly use natural habitats (98% of points) and are mostly far (67% of points > 1 km) from urbanization. Radio-collared mountain lions have not behaved aggressively towards humans or pets and have had minimal conflict with livestock. Conflicts that have occurred have been easily remedied with improved husbandry techniques. Although mountain lions are generally behaving “naturally,” finding plenty of prey (95% of kills are mule deer), and successfully reproducing, they face challenges related to the urban environment. Nine of 10 mountain lions tested have been exposed to anticoagulant rodenticides, and two animals died of anticoagulant toxicity. Barriers to habitat connectivity, specifically freeways, represent the biggest challenge: young males are unable to disperse, intraspecific conflict is the most common source of mortality, and Santa Monica Mountain lions have reduced genetic diversity. Maintaining and restoring effective connectivity is critical for large carnivore conservation in urban areas.

Community Coyote Hazing Programs: Achieving Success Through Shaping the Behavior of Both People and Coyotes

Lynsey A. White, The Humane Society of the United States, 700 Professional Drive, Gaithersburg, MD 20878

Much of the information that the public receives today about coyotes (*Canis latrans*) comes through media reports of attacks on pets and aggressive encounters with people. This has led to a heightened level of fear among the public, which influences decisions regarding the management of human-coyote conflicts. In response to conflicts, local officials often institute a trapping program in efforts to remove “aggressive” or “diseased” coyotes and allay the fears of local residents for their children and pets. However, this approach does not include proactive measures for resolving human-coyote conflicts, does not address the root cause of conflicts, and is usually unsuccessful in the long-term. A newly emerging model for resolving human-coyote conflicts involves the training of local residents and park staff in simple coyote hazing techniques. Denver, Colorado has achieved significant success using coyote hazing as their principal technique for reversing aggressive and undesirable behaviors in habituated coyotes and reducing human-coyote conflicts. A recent survey of local residents in Denver also revealed additional positive benefits of this program: respondents indicated that

the training helped alleviate their fears of coyotes and empowered them to take hands-on steps to deter coyotes from their neighborhood. The overall result is reduced fear of coyotes among residents and a clear trend toward coexistence between coyotes and people in the Denver area.

SESSION N: Policy and Processes for Overabundant Urban Wildlife

Moderator: Ryan Schoeneberg, Texas Parks and Wildlife Department

Toronto's Leslie Street Spit: Habitat Creation, Urban Hybridity and Environmental Planning

Jennifer Foster, York University, Faculty of Environmental Studies, 4700 Keele St, Toronto, Canada, M3J 1P3

This paper examines the role that urban ecological restoration and habitat creation play in the formation of socially constructed, hybrid ecologies, and how these might be interpreted in contemporary urban environmental planning strategies. Focusing on the case study of Toronto's Leslie Street Spit, a 5-kilometer long dump/wilderness refuge that juts from the city's downtown, this paper considers the intertwined political, socio-cultural and biophysical form and functions of the Spit. The aesthetic appeal of the Spit as a "sublime landscape" and its popular celebration as an emblem of the power of ecology over demolition contribute to an environmental imaginary of feral urban nature. The Spit's appeal to colonial and migratory birds – including six percent of the worldwide breeding population of ring-billed gulls (*Larus delawarensis*), and as much as 30% of Canada's population of black-crowned night herons (*Nycticorax nycticorax*) – has inspired strategies for ecologically protection and enhancement of the landscape, including integrating it into a system of corridors lacing the city. The complex planning challenges surrounding hybrid ecologies are well represented here: the space thrives by virtue of invasive species; it is popularly cherished through a powerful post-apocalyptic aesthetic ideal; it is heavily contaminated; it is a magnet for vast bird colonies; it is an active industrial site; and it is in the downtown of a city populated by 5.5 million people. This paper employs archival research, qualitative research, analysis of policy and planning documents and site analysis to understand the challenges and opportunities for creation of robust hybrid ecologies in urban settings such as the Leslie Street Spit.

Managing White-Tailed Deer In Urban Environments: An Animal Protection and Welfare Perspective

John Hadidian, Bernie Unti, Laura Simon, Stephanie Boyles, The Humane Society of the United States, 2100 L. St., NW, Washington, D.C. 20037

Allen Rutber, Center for Animals and Public Policy, Tufts University School of Veterinary Medicine, 200 Westboro Road, North Grafton, MA 01536

Perhaps no other issue concerning urban wildlife is as rife with controversy as the management of deer. Deer have a biological potential and social significance that uniquely qualify them as a "biopolitical" concern. Deer populations are important as the economic engine that helps sustain state wildlife agencies, and individual deer touch people's lives directly when they damage ornamental plants, are involved in accidents with vehicles, or are viewed and enjoyed for purely aesthetic reasons. Efforts to resolve the human-human conflicts arising over deer management have contributed significantly to the development of human dimensions approaches in wildlife management. Among these, increasing attention is now paid to the idea of deer as social constructs—possessors of varying identities of such different meaning to different publics that resolving conflicts with them might better be addressed as an issue of governance than management. Here, the basis for the construction of deer as "wild neighbors" is outlined and discussed, with particular attention paid to the animal welfare and protection concerns that surround these animals.

A Case-Based Decision Analysis of Urban Deer Management Strategies

G. Kent Webb, San Jose State University, 129 South 10th Street, San Jose, CA 95192-0244

How best to manage urban deer populations has become a heated issue in municipalities around the country. To investigate this issue, the results from an internet search tool used to scan news stories every day over a ten month period for a deep search of internet information was combined with standard search techniques to create a detailed text database of urban deer management cases. This database was augmented with a search of the scientific literature to support a decision model in the style of Adaptive Resource Management summarizing current practices with the goal of providing a

framework that can be used to achieve best practices for specific management scenarios and circumstances. Information on the costs, risks, and frequency of use for alternative management strategies will be presented. Recent innovations that have expanded the number and effectiveness of alternative strategies will also be discussed, including automated systems for applying medication to deer, darting and tracking technologies. Approaches to determining objectives, such as the use of online surveys, are evaluated based on the case literature. A publicly available online framework will be available for demonstration. Conclusions include that the threat of Lyme disease associated with deer is often overestimated, urban concerns with deer/vehicle collisions where deer size increases damage can be at odds with recreational objectives where the goal is to increase deer size, and long-term solutions offered by urban design are often underutilized.

Urban and Suburban Deer Management by State Wildlife Conservation Agencies

Rachael E. Urbanek, Cooperative Wildlife Research Laboratory and Department of Zoology, Southern Illinois University, Carbondale, IL 62901-6504, USA

Kristin R. Allen, Cooperative Wildlife Research Laboratory and Department of Zoology, Southern Illinois University, Carbondale, IL 62901-6504, USA

Clayton K. Nielsen, Cooperative Wildlife Research Laboratory and Department of Forestry, Southern Illinois University, Carbondale, IL 62901-6504, USA

Although white-tailed deer (*Odocoileus virginianus*) have become a management challenge, little is known regarding current utilization of urban deer management techniques, their perceived efficiency, and legality. We emailed a survey to state wildlife agency deer biologists in 41 states to investigate what state agencies are doing to control urban deer, what management techniques have been used in the past and are currently being used, and which techniques are believed to be most effective. Urban and suburban deer populations were increasing in most states (75.8%); accordingly, most deer biologists (97%) believed that urban and suburban deer were a problem in their state. Sixty-five percent of states surveyed local communities for their opinions on deer management. Managed archery hunts (85% of states), sharpshooting (68%), and managed firearm hunts (59%) were the most utilized methods by state agencies during the past 5 years. Most biologists (54%) ranked managed firearm hunts as the most preferred method for deer control, followed by managed archery hunt, then sharpshooting. Ninety-one percent of deer biologists listed deer-vehicle accidents and damage to gardens as primary reasons for managing urban and suburban deer populations. Most biologists (88%) indicated that urban and suburban deer management in their state was overall effective. Although state agencies identified that deer overabundance is a problem, it appears that efforts to reduce or control suburban and urban deer populations have not been entirely successful. We recommend more state agencies survey their public constituents regarding their beliefs and concerns about suburban and urban deer management.

SESSION O: Case Studies in Ecology-based Restoration

Moderator: Marita Roos, Urban Biology

Session Overview: With two-thirds of the world's population predicted to be living in cities by 2050, the battle for biodiversity may well be won or lost in urban areas. What does urban ecological restoration offer to the planning, design and engineering disciplines that are shaping our cities? Our experiences with planning, restoring and managing urban ecology offer practical lessons for urban planners and designers who want to plan and develop along a natural systems framework. The presentation will be structured as a panel discussion, preceded by brief presentations from each panelist. Marita Roos will share her experience in green infrastructure planning for the City of San Antonio and the Edwards Aquifer. Mark T. Simmons will bring design, implementation and maintenance lessons from the Wildflower Center's green roof and open space programs. Lee Marlowe will delve into the challenges of restoring the San Antonio Mission Reach with the US Army Corps of Engineers. Participants will gain understanding of the complexity of urban restoration and applications of this science toward regenerative urban planning and design.

Green Infrastructure for San Antonio and Beyond

Marita Roos, Urban Biology, 107 Talavera Parkway #531, San Antonio, TX 78232

Public policy incorporating green infrastructure design and planning has achieved nationwide implementation within the past decade, and most notably within the past three years with the advent of many state and municipal "green plans" addressing stormwater, transportation and open space plans within an ecological context. Central Texas has now begun

to explore more sustainable policies through avenues such as greenway networks, low-impact stormwater design for the Edwards Aquifer and new street design typologies for San Antonio. These initiatives and their implications for native biodiversity management will be explored in a presentation, followed by a group panel discussion.

Grassland Restoration Near Urban Areas: It Can Be Done

Mark T. Simmons, Lady Bird Johnson National Wildflower Center, 4801 La Crosse Avenue, Austin, TX 78739

Embedding functioning native ecosystems within the urban environment optimizes ecosystem services such as clean air and water, flood mitigation, and human health and recreation. The Southwest Greenway project combines low-intensity, passive recreation with the restoration of a native Blackland Prairie community – once a prolific ecosystem, now less than 1% of this original habitat remains in Central Texas. The restoration is not only important as open green space for public recreation, but also provides vital ecosystem services which enhance the environmental health of the city. Users and residents are learning about the importance of the native Texas landscape and how to make their own back yard an effective extension of the restored prairie.

Restoration of an Urban River: San Antonio's Mission Reach

Lee Marlowe, San Antonio River Authority, 100 East Guenther Street, San Antonio, TX

The purpose of the Mission Reach portion of the San Antonio River Improvements Project is to restore ecosystem functions along an 8 mile segment of the San Antonio River while maintaining flood conveyance capability and incorporating recreational elements. The project faces many challenges including the influence of significant urban storm water runoff, conflicting adjacent land uses, coordination among a diverse group of project stakeholders, maintaining natural and formal landscapes of the project in perpetuity, and educating the community to promote an understanding and appreciation of this important resource. The restoration project is viewed as one of the most significant civil projects to occur within the region and provides a win-win for the community and the environment.

SESSION P: Sustainable Design and Regional Planning

Moderator: Nancy Herron, Texas Parks and Wildlife Department

Improving the Process of Setting Biodiversity Baselines: A Case Study From Austin, Texas Using a Holistic Approach Combined With Species Distribution Modeling

Dean A. Hendrickson, Ben J. Labay, Adam E Cohen, F. Douglas Martin, University of Texas, Texas Natural Science Center, Texas Natural History Collections, PRC 176 / R4000, 10100 Burnet Road, Austin, TX 78758-4445

Blake Sissel, Sahotra Sarkar, Section of Integrative Biology, University of Texas at Austin, Austin, TX 78712

Accurate establishment of baseline conditions is critical to successful management and habitat restoration, but there is a well-documented tendency for management baselines derived using standard methods to be set incorrectly or for them to shift over time. We demonstrate the ability to robustly estimate historical fish community composition and current status of the urbanized Barton Creek watershed in central Texas by applying a holistic approach utilizing standard survey methods, historic collection data, collectors' archived fieldnotes, literature and archival research, land-owner interviews, and species distribution models (SDMs). This diverse approach, and especially the application of SDMs, allowed us to discover that the historic fish community was almost certainly far more diverse than the historical data and surveys alone indicated. Our approach allowed us to much more rigorously establish the true baseline for the pre-development fish fauna and then to more accurately assess trends and develop hypotheses regarding factors driving current fish community composition to better focus research and inform management decisions. Most smaller freshwater systems, like Barton Creek, typically have a relatively poor historical biodiversity inventory and thus a propensity for application of inaccurate baseline standards, but our methods provide a way around that limitation, using SDMs derived from larger and richer biodiversity databases of broader geographic scope. We therefore suggest that managers would be well advised to apply a much more holistic approach, and especially SDMs, to derive biodiversity benchmarks and assure that their baselines accurately depict historical reality.

Case Study: Acquisition of the Habitat Authority's Puente Hills Preserve, California

Andrea Gullo, Puente Hills Landfill Native Habitat Preservation Authority (Habitat Authority), 7702 Washington Avenue, Suite C, Whittier, CA 90602

The Habitat Authority is a local government authority that manages a 3,869 acre Preserve in the Puente Hills within Los Angeles County which is biologically connected to a larger wild land area, the Puente–Chino Hills Wildlife Corridor. The purpose of the agency is acquisition, restoration and management of the Puente Hills. It manages land it acquires and land owned by three of its Board Members. There have been approximately 42 land transactions. The first for conservation purposes was by Whittier in 1994 and the last was by the Habitat Authority in 2007. Acquisitions were achieved using a range of mechanisms from donations, development mitigation, straight acquisition, or management of easements. Some acquisitions have prevented imminent and devastating developments, while others were mitigation for off-site projects. The largest acquisition and most challenging took almost a decade and involved the LA Catholic Archdiocese, two cemeteries, a home builder, an endangered species, support from the community, patience and creativity. The key to success has repeatedly been local grassroots and government support, resulting in a wild land oasis within Los Angeles Metropolitan area that supports the federally threatened CA gnatcatcher and large-to-medium sized mammals. Despite the successes, acquisition is just the first step; Coexistence with wild neighbors is the next step for achieving long term sustainability of open space.

The Military-Ecological Complex: Security, Sustainability, and the Future Roles of Military Lands in an Urbanizing World

Allan W. Shearer, University of Texas at Austin, School of Architecture, 1 University Station, B7500, Austin, TX 78712

To help provide for national security, governments set aside lands for military training and testing operations. But this is not to say that such allocations of a public resource are granted to the exclusion of other needs. To the contrary, military lands are being recognized increasingly as important for helping provide for environmental security—the protection of the ecological processes that allow societies to exist and to flourish, such as clean air, clean water, and high biodiversity. Indeed, in the United States, the roughly 24 million acres of land used by the Department of Defense provide a disproportionate amount of endangered species habitat when compared with the lands used by other federal agencies. This presentation considers the sometimes reinforcing and sometimes conflicting relationships between national and environmental security needs. It draws upon several futures-oriented studies funded by the US Department of Defense to consider how both kinds of security might be maintained in an increasingly urbanizing world. Special attention will be given to projects that examined the role of installations in support of regional biodiversity in the US Southwest.

How Policy and Design Collaborate Through the Eyes of a Landscape Architect

J. Robert Anderson, J. Robert Anderson Landscape Architects, 3718 Manchaca Road, Austin, TX 78704

Designing with nature is a basic criteria of practice for most landscape architects. Two prominent Austin projects will be reviewed for their influence on the inclusion of wildlife in their design, facilities, and management. They include the Lady Bird Johnson Wildflower Center, and the Balcones Canyonlands National Wildlife Refuge. Discussion will track a designer's perspective on setting exceptional ecological standards for site design to protect habitat areas, site construction standards, the importance of understanding the economic value of wildlife in open space, and collaborating with scientific staff during construction.

CLOSING PLENARY –

Where Do We Go From Here? A Vision for the Future of Urban Wildlife Management

John Davis, Interim Wildlife Diversity Program Director, Texas Parks and Wildlife Department

POSTER PRESENTATION ABSTRACTS

Urban Playa Hydrology Restoration: Urban Playa Habitat Improvements in Midland, Texas

Nathan Knowles, I-20 Wildlife Preserve, P.O. Box 2906, Midland, TX 79702

Martin Christman, Geosyntec Consultants, 3600 Bee Caves Rd., Ste. 101, Austin, TX 78746

The I-20 Wildlife Preserve & Jenna Welch Nature Center site is an outstanding educational, scientific, recreational, and environmental resource located within the city limits of Midland, Texas. The 87-ac. preserve includes a publicly owned playa and is a safe refuge for West Central Flyway migratory birdlife in an urbanized area. The master plan includes handicap accessible hiking trails, bird blinds, butterfly gardens, teaching platforms, feeding stations, bridges, boardwalks and hawk tower. Draining the west side of Midland, the property receives runoff from an urban watershed. As one of the first steps in completing the master plan, the preserve is converting one of the straight drainage ditches into a more natural meandering stream. In addition to aesthetic improvements, the new stream alignment will create riparian habitat and improve water quality for local and migrating wildlife that utilize the playa. The stream restoration design is being accomplished by mimicking meanders found in local undeveloped stream systems, reconnecting a pond to filter inflows to the playa, and maintaining the flow capacity of the existing floodplain. Additionally, the existing playa outlet structure is being retrofitted with flashboard risers to allow for management of water levels. The improvements will be constructed with assistance from USFWS and NRCS. This project serves as an example of a successful partnership between public, private, and non-profit entities.

Introduced Amphibians and Reptiles in the Lesser Antilles: A Primarily Urban Phenomenon

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Gerard Van Buurt, Kaya Oy Sprock 18, Curaçao

Christina Romagosa, Department of Biological Sciences, Auburn University, AL

We documented over 150 incidents of introduced amphibians and reptiles on Lesser Antillean islands, almost certainly a very conservative estimate. Of the documented arrivals, 96 (60.4%) are established at least locally. Ten introductions failed and the remainder represents “strays,” individuals or small numbers of animals that never became established. Many of the introduced populations are largely or entirely restricted to urban habitats, though some have successfully invaded natural environments. Some introductions were for pest control and others for food, but most introductions are associated with the burgeoning pet industry and increased economic activity. Although some localized populations of invasive species are vulnerable to eradication efforts, prevention remains by far the best—and most economical—approach. An increased scrutiny of the transport to and from the islands (whether cargo where inadvertent stowaways may hide, ornamental plants that often carry hitchhikers, or the pet trade that is the source of so many introductions) seems especially desirable.

Herpetofauna Admitted to the South Plains Wildlife Rehabilitation Center (Lubbock, Texas): A Two-Decade Perspective

Kathleen McGaughey, Mark Wallace, and Gad Perry, Department of Natural Resource Management, Texas Tech University, Lubbock, TX 79409

The South Plains Wildlife Rehabilitation Center (SPWRC) serves the South Plains and helps address urban human-wildlife interactions. We examined all SPWRC admission records for the years 1991-2009, almost 700 individuals belonging to at least 43 identified species. The majority of these, 626 individuals (616 reptiles and 10 amphibians belonging to at least 19 species) were native, and another 52 (48 reptiles and 4 amphibians) belonging to at least 24 species, were non-native. Admission numbers gradually increased during the 1990s. By far, most admitted individuals were native chelonians, primarily Ornate Box Turtles ($n = 342$) and Red-Eared Sliders ($n = 138$). The most common lizard was the Texas Horned Lizard ($n = 36$). Turtles also dominated among non-natives, which also included Green Iguanas, Monitor lizards, Boas,

Corn Snakes, and a surprising number of American Alligators (*Alligator mississippiensis*, $n = 5$), among others. Most admitted animals were reported “injured” or found roaming. The most common disposition for both native and non-native animals was “released” after treatment. More solutions are needed for disposition of rehabilitated native and non-native wildlife alike: the latter may become invasive and the record for outcomes in the former is generally discouraging. Investing considerable resources in nursing an animal back to health, only to have it die upon leaving the Center, seems counter-productive.

Effects of Urbanization on Movements, Activity, and Translocation Site Fidelity of Ornate Box Turtles in the Southern High Plains of Texas

J. Alan Sosa and Gad Perry, Department of Natural Resource Management, Texas Tech University, Lubbock, TX 79409

The majority of urban wildlife research has been conducted on birds and mammals, but studies of herpetofauna are proliferating. Habitat loss is the primary threat to reptiles and also the main factor responsible for box turtle declines. Reptile mortality as a result of anthropogenic hazards including road, garden, agricultural, and domestic animal depredation is common trend in urban reptiles. We studied a superficially healthy population in Lubbock, Texas and compared it to a non-urban population in the same region. Urban “constrained” box turtles had significantly smaller home ranges (0.034 ha) than “natural” turtles (2.65 ha). “Free-ranging” urban turtles had intermediate home ranges (1.27 ha). Urban turtles were more uniformly active across the day and were active at higher temperatures than “natural” turtles. Of 39 translocated ornate box turtles, 50% of hatchlings, 100% of juveniles, and 29% of adults remained at the release site. Our findings suggest that adult translocations should not be considered unless absolutely necessary, but juvenile translocations may be a viable conservation strategy. Finally, we taught a group of at-risk students about box turtle biology, then had them assist with data collection. Students self-reported knowing significantly more about box turtles, compared to a control group, but neither group significantly changed their empathy between the pre and post questionnaires.

Density and Behavior in an Urban Squirrel Population

William E. Persons and Tommy S. Parker, University of Louisville, KY

The University of Louisville Belknap campus is located in the north central portion of Louisville, KY near the central business area. The campus is approximately 34.61 hectares in size and bordered by large four lane streets on all sides. Squirrels were trapped and released in the summer and fall of 2010 using tomahawk live traps with the resulting population estimates 11.40/ha. Behavioral tests conducted during both trapping seasons suggest that the squirrels present on campus show decreased wariness towards people. For wariness, a trained tester would approach the third random squirrel observed at a normal walking pace until the squirrel fled. The distance from the tester to the squirrel, at the time the squirrel fled, was measured and recorded as the startle distance. The average startle distance was 6.24 meters ($n = 103$). Squirrels choose to either retreat up a tree or flee to a perceived safe distance while remaining on the ground. Of the 103 squirrels tested, 58% or 60 animals choose to run across the ground, with an average flee distance of 5.62 m. Of the remaining 42% or 43 squirrels, the flee distance was 3.05 meters to the nearest tree.

Surviving in the City: A Review of Urban Predation and Its Impacts on Avian Communities

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The past 50 years of urban ecology research have shown that avian communities respond to urbanization in predictable ways. Both top down and bottom up effects have been suggested as key factors that shape these communities. Here

we review the literature on predation in the context of urbanization as a means of assessing the relative importance of top down effects. We examine patterns of survival at different life stages (i.e., nest, juvenile, adult) in various landscape contexts and explore changes in avian behavior and the numbers and types of predators that may influence survival. The relative importance of predation in structuring urban communities has ramifications for managing urban landscapes to maximize conservation potential and to minimize human-wildlife conflict.

Responses of Medium and Large Mammals to Increased Recreation and Other Activities Over an Eight Year Period in the Puente Hills Preserve

Shannon Lucan and Andrea Gullo, Puente Hills Landfill Native Habitat Preservation Authority,
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A study was conducted by the USGS in 2001-2002 at the Puente Hills Preserve in southeastern Los Angeles County to study recreational effects to wildlife in and around a tunnel under a busy regional road. In 2009-2010, the study was repeated using the same scent-station transect and motion-sensor camera locations in order to evaluate any changes in wildlife use considering a nearly five-fold increase in human activity. Most notable was the change in bobcat activity. Camera data indicates that bobcat tunnel use has decreased by more than half, but transect data indicates that bobcat presence has nearly tripled. The decrease in bobcat activity at the tunnel may be due to the substantial increase in human activity. The increase in bobcat activity along transects may be because there were high levels of disturbance in 2001-2002 from habitat restoration activities, which have since decreased and the restored habitat as matured. However, this increase does not bring bobcat activity levels to those recorded in the area in the late 1990s before it was officially opened to recreational activities. These results indicate that recreational and restoration activities may influence bobcat activity, which is important for Preserve management as they are a key indicator species. Consistent use of the tunnel by large mammals combined with a decrease in roadkill indicates that the tunnel remains functional for wildlife movement under current conditions.

Evaluating the Network of Habitat Patches in Lake County, Illinois Through the Use of GIS

Andrew Valand, University of Illinois at Chicago, College of Urban Planning and Policy, 412 S. Peoria St., Chicago, IL 60607-7064

The Lake County Forest Preserve District in Northeastern Illinois has been actively purchasing significant portions of land for restoration and protection over the last ten years. Between the years of 2008-2010, the Lake County Forest Preserve District spent \$152 million to acquire 3,177 acres of land throughout the county. With such a great potential for preserving large areas of land, strategic prioritization in land acquisition is necessary for maintaining maximal biodiversity. Through greater degrees of biodiversity represented by the presence of a large variety of species, we can hope to maintain a healthy and stable local ecosystem. Using dispersal distances and home ranges for long-tailed weasels, I intend to estimate the connectivity among habitat patches for small urban carnivores. Through systemically identifying habitat types and utilizing data collected for matrix composition between patches, functional connectivity tools in GIS can be applied to evaluate and rank habitats for suitability and dispersal potential. This method has been applied to large scale habitat analysis, such as regionally, but has not been utilized often in relatively localized urban settings. The results of this project could have important implications in guiding the selection process of land conservation by preferentially ranking potential preserves and conservation easements.

Every Day Is a Winding Road: Local-Scale Analyses of the Influence of Highways on Wildlife Connectivity in Southern California

Lisa M. Lyren¹, Robert S. Alonso², William M. Perry¹, Robert V. Lugo¹, Kevin R. Crooks², and Erin E. Boydston¹

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Synthesizing data from 2008-2010 and 1997-2000, we evaluated wildlife movement and assessed relative importance of undercrossings to landscape connectivity in an area fragmented by highways and other development. To assess road permeability during 2008-2010, we monitored 65 undercrossings along 20 km of highways using remotely-triggered cameras to detect carnivores and mule deer, and placed GPS-collars on bobcats and coyotes captured nearby for tracking. We conducted mortality surveys for animals struck by vehicles and collected genetic samples from carcasses and live-captured animals. Using GIS, we examined crossing activity based on GPS collar data, camera detections, and mortality locations,

and identified undercrossings frequently used by target species and road sections where wildlife appeared vulnerable to vehicle strikes. We examined movement routes across the landscape to estimate how flood, wildfire, and urbanization influenced them. We incorporated carnivore genetic information and observations of reproduction into understanding landscape connectivity, and compared these results to data collected during 1997-2000 to evaluate how undercrossing construction and other modifications in 2005 influenced wildlife movement patterns observed during 2008-2010. From this integrated approach, we identified undercrossing hot-spots most important to wildlife persistence in the area.

Teaching Students to Work in Urbanizing Forests: Changing Roles in Natural Resources Education

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The Changing Roles:Wildland-Urban Interface Professional Development Program (CR) provides a set of flexible resources to build knowledge and tools to successfully tackle wildland-urban interface (WUI) issues. Changing Roles consists of four training modules: (1) Introduces key wildland-urban interface issues and their interconnections, (2) Provides tools and knowledge for understanding landowners and effectively managing resources in the interface, (3) Explains strategies for understanding and influencing the development of land-use policies and plans that affect natural resources, and (4) Discusses tips and approaches for effective communication with diverse stakeholders and community leaders. The modules are flexible and can be modified and used in a variety of settings to create training programs to address the needs of different audiences, agencies, or organizations. Since 2008, the USDA Forest Service's Changing Roles Program Training Coordinator and University of Florida Faculty have been integrating CR materials into undergraduate level courses at the University of Florida's School of Forest Resources and Conservation. Currently CR materials are used in the Foundations in Forest Resources and Conservation and Urban Forestry courses. CR fact sheets and exercises introduce students to interface issues and challenges and allow them to practice the skills necessary to better manage natural resources in urbanizing areas.

Toad Trackers: Using Citizen Scientists Through Conservation Education Programming to Monitor Urban Amphibian Populations

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The Houston Zoo Toad Trackers program has two overarching goals: (1) to generate an appreciation and stewardship ethic for the world's most endangered vertebrate class, the Amphibians (2) link principles in environmental education and field biology to introduce urban youth to the tools and research methods used by wildlife biologists to study animal populations, thereby generating enthusiasm for future careers in conservation. Through a combination of classroom workshops and hands on field-based experiences, Toad Trackers expands on the idea of "citizen science" such as Texas Parks and Wildlife Amphibian Watch and the U.S. Geological Survey's North American Amphibian Monitoring Program. Participants learn aspects of data collection, amphibian population monitoring, spatial analysis, and demography, all within the context of the global amphibian crisis, and why monitoring local populations of "common" amphibians are important to detecting declines in our own region. In 2010, the inaugural year of Toad Trackers, 100 new amphibian advocates went through the program. These participants collected morphological, spatial, and environmental data on 53 Coastal plains toads (*Incilius nebulifer*) over 7 survey field evenings. Future programming will incorporate population estimates using prior years capture and recapture data. This program was made possible by a 2009 grant from the Texas Parks and Wildlife Department Community Outdoor Outreach Program.

Bird City Wisconsin: Making Our Communities Healthy For Birds ... and People

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Abstract: Bird City Wisconsin, a new coalition of citizens, public officials and organizations led by the Milwaukee Audubon Society, the Wisconsin Bird Conservation Initiative, and the Wisconsin Society for Ornithology, wants to ensure that folks living in Wisconsin's communities maintain healthy populations of birds and appreciate them. We have developed a new community recognition program modeled on the successful nationwide program, Tree City USA. Communities, whether they are towns, villages, cities, or counties, that come together to help protect birds using a variety of conservation activities

will be designated as Bird City Wisconsin recipients. The program offers public recognition — including street signs, flags and plaques — to communities that meet at least 7 of 22 criteria for creating/protecting bird habitat, fostering conservation education, taking steps to protect birds from a range of perils, and celebrating International Migratory Bird Day. Bird City Wisconsin stresses the economic incentive for communities to practice conservation. The EPA estimates that more than half of all U.S. adults hunt, fish, bird watch or photograph wildlife, spending a total of \$59.5 billion annually. Some 20 communities in Wisconsin already have been accorded recognition. The project was launched with funding from Together Green, an alliance between the National Audubon Society and Toyota. See www.birdcitywisconsin.org for details.

Provisioning Rates of Urban Mississippi Kites

Brandi Welch, Department of Biological Sciences, Texas Tech University, Lubbock, TX 79409

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Land conversion into urban ecosystems necessitates a greater understanding of the ecology of urban species. Urban ecosystems have been found to be attractive to several species of raptors, especially those utilizing smaller prey. Mississippi kites (*Ictinia mississippiensis*) are among the most abundant, and adding to the limited body of knowledge on the species' ecology will facilitate a greater understanding of urban ecosystems. An assessment of the factors influencing prey capture and delivery to nests was conducted by identifying prey items and quantifying provisioning rates of male and female Mississippi kites to nestlings. In 2010, 140 hours of direct observations were conducted at 5 nests in Lubbock, TX. A total of 281 prey deliveries were observed with a provisioning rate average of 2.0 prey deliveries/nest/hour. Male effort constituted 41% of prey deliveries, females delivered 51% of prey items, juveniles and unidentified individuals accounted for <1% and 8% respectively. Cicadas comprised 41% of identified deliveries, followed by dragonflies (38%), and grasshoppers (6%). Results suggest that the diets of kites are heavily dominated by cicadas and dragonflies during the nesting season. Our observed provisioning rate did not vary significantly with time of day or with parental sex indicating equitable provisioning effort throughout the day and between parents.

Open Space System as an Armature for Urban Expansion: A Poster: Exploration of Landscape Pattern Effects on Wildlife Movements in Urban Areas

Homero M. Penteadó, University of Oregon, 235 Marche Chase Dr., Apt. 17, Eugene, OR 97401

Urban open spaces are areas that provide recreational opportunities and amenities. They also provide habitats and movement corridors for native wildlife. The purpose of this study is to develop and apply a future scenario framework to investigate the capacity of different open space configurations to provide connectivity for selected wildlife species in landscapes facing urbanization. I adopt and test landscape ecological spatial concepts to generate urban open space scenarios. The focal area for this study consists of three urban reserves in Damascus, OR, within a larger study area in Portland's metropolitan region. The spatial concepts addressed here raise questions such as how do urban corridors of various widths contribute to connectivity for certain species? What habitat patch size is appropriate? and others. I also consider different land use configurations and the questions that accompany them. For example, does adjacency of different land uses influence wildlife species dispersal, and if so, how? I focus on three species: one mammal, one bird, and one amphibian. A computer model - Envision - is used to depict and compare a large number of landscape pattern scenarios. The resulting set of scenarios will be subjected to an ecological evaluation. A computer model - HexSim - will be used to evaluate dispersal of each species in the existing landscape and in each future scenario. The results are intended to be useful to planners, communities, and decision makers in helping them visualize desired futures and understand the policies that led to them.

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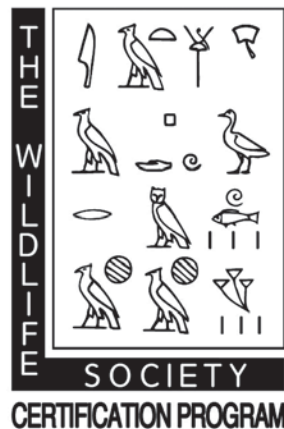
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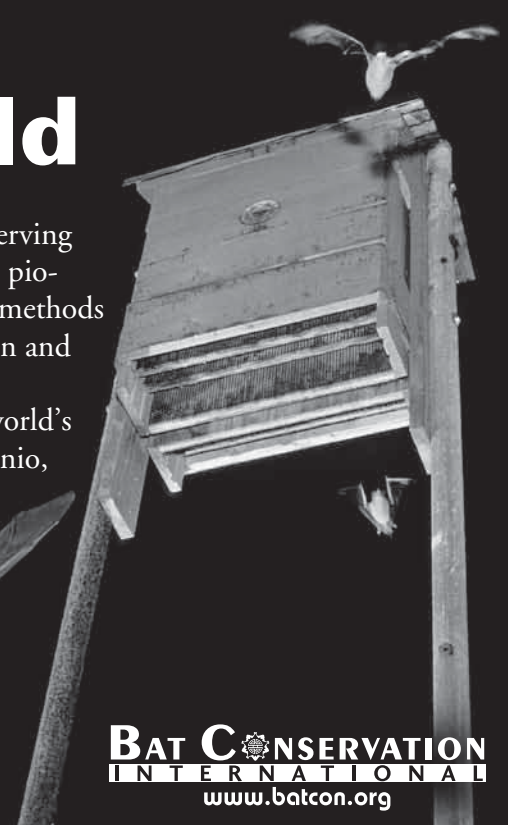
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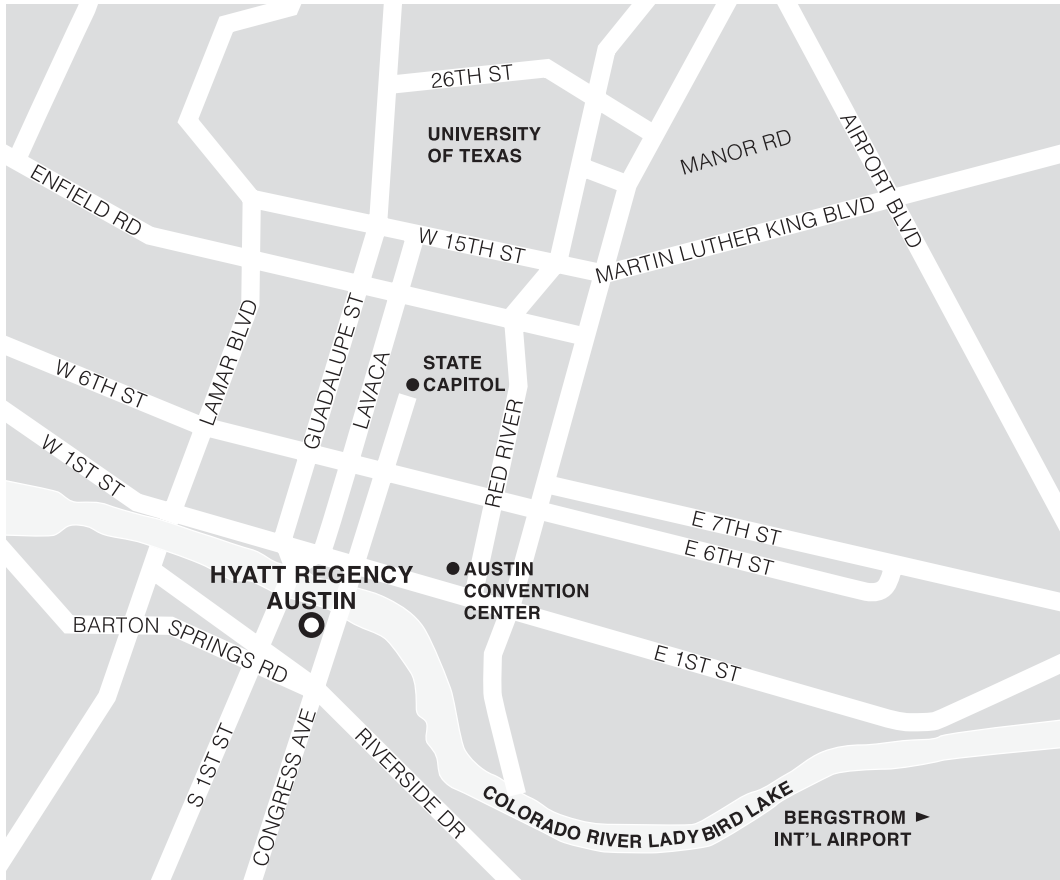
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306 Barton Springs Road

Austin, TX 78704

(512) 480-0952

www.aussiesbar.com/

HOURS

Mon–Sun: 11 AM – 2 AM

HAPPY HOUR

Mon–Fri: 3 PM – 7 PM

1/2 price Appetizers 11 PM – 2 AM

everyday &

2 PM – 7 PM Mon–Fri

Zax Restaurant & Bar

312 Barton Springs Road

Austin, TX 78704

(512) 481-0100

www.zaxaustin.com/

HOURS

Mon–Thurs: 11 AM – 10 PM

Fri–Sat: 11 AM – 10:30 PM

Sun: 11 AM – 3 PM

HAPPY HOUR

Mon: 4 PM – 10 PM

Tues–Fri: 4 PM – 7 PM

Threadgill's

301 West Riverside Drive

Austin, TX 78704

(512) 472-9304

www.threadgills.com/

HOURS

Mon–Thur: 11 AM – 10 PM

Fri–Sat: 11 AM – 10:30 PM

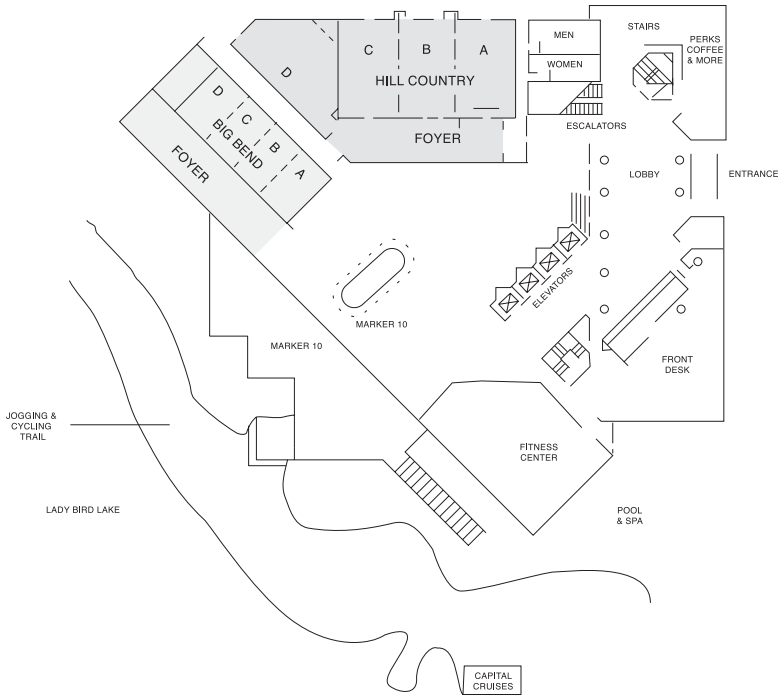
Sun: 10 AM – 9:30 PM

HAPPY HOUR

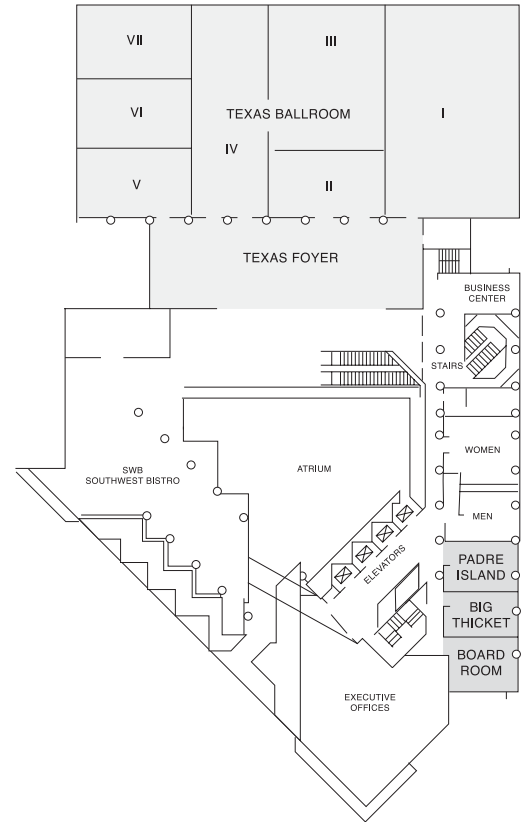
Mon–Fri: 3 PM – 6 PM

HYATT REGENCY FLOORPLAN

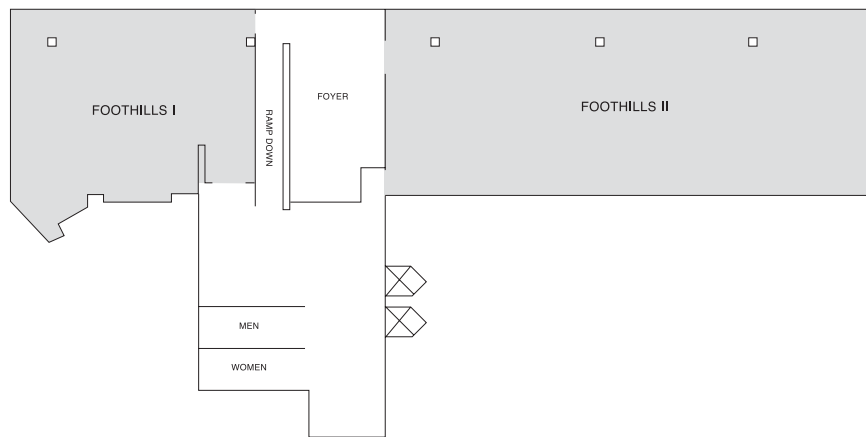
FIRST FLOOR



SECOND FLOOR



SEVENTEENTH FLOOR
FOOTHILLS BALLROOMS





Waikoloa, Hawaii - November 5-10, 2011

THE WILDLIFE SOCIETY'S 18TH ANNUAL CONFERENCE

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largest gathering of wildlife professionals.**

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-  **technical paper and poster sessions**
-  **workshops**
-  **symposia**
-  **Working Group meetings**
-  **student activities**
-  **exhibits**
-  **social events**

www.wildlife.org



Urban Wildlife Program

Accomplishing conservation in an urban world



Working *with* people...*for* wildlife

Urban Wildlife offices offer free technical assistance to help urbanites better manage natural resources. Urban Biologists assist local parks, corporate sites, schools, developers, municipalities, consulting firms, and homeowner's associations in various ways including:

Technical Guidance for Urban Land Managers:

- Habitat assessment/restoration/management
- Urban hydrology—watersheds/streams/ponds
- Regional planning for wildlife conservation
- Solving wildlife problems

Wildlife Impacts of City Policy:

- Landscape/tree ordinance analysis
- Wildlife habitat ordinance assistance
- Development regulations assistance
- Water conservation policy

Citizen Involvement/Research:

- Citizen science surveys
- Conservation outreach
- Urban wildlife research
- Volunteer training



Office Locations: Dallas/Ft Worth, Houston, Austin, El Paso, San Antonio, Weslaco
For assistance contact: John Davis at (512) 389-8587 or john.davis@tpwd.state.tx.us